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International policy process for technology, design, women and development : a feminist perspective.

INTERNATIONAL POLICY PROCESS FOR TECHNOLOGY, DESIGN, WOMEN AND DEVELOPMENT: A FEMINIST PERSPECTIVE

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ABSTRACT

The research explored the awareness of gender and technology issues in international development organisations and its impact on technology policy implementation in relation to women and development. The research examined the extent to which international development organisations are aware of design and its impact on technology policy. To ensure the visibility of women in the overtly masculine areas of technology and design, the research takes a feminist perspective.

The implementation structures of international development organisations were examined by taking a 'slice' through from grassroots to international level. In depth interviews were carried out in a non-governmental organisation, governmental and supra-governmental organisations. In addition, designers from major international design consultancies with an espoused interest in development were interviewed. Material in the form of UN publications and organisational documents were included in the analysis.

The focus on craft production and not industry limits indigenous technology innovation. Western designers present a romanticised view of development, with design practice being overtly masculine and non-participatory. Design is seen as gender neutral. At the non-governmental level there was evidence of individual good practice. There was also evidence of individuals implementing technology policy while 'getting round' the organisation's gender policy. The two governmental organisations presented different approaches to gender policy and technology; mainstreaming versus sectoral. The UN organisations both mainstream gender policy and implement women specific projects. Women specific projects are considered essential for ensuring women's access to technology.

The extent of 'getting round' gender issues and the denial of gender dimensions in the implementation of technology policy suggest the existence of a gendered technological determinism. For development to be successful, international technology policy has to empower women through focusing on the social shaping of technology using design.

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AUTHOR'S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the Regulations of the University of Bristol. The work is original except where indicated by special reference in the text and no part of the dissertation has been submitted for any other degree.

Any views expressed in the dissertation are those of the author and in no way represent those of the University of Bristol.

The dissertation has not been presented to any other University for examination either in the United Kingdom or overseas.

SIGNED: Marjan Lou Lewell DATE: 1 September 1999

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CHAPTER ONE

INTRODUCTION

The research focuses on the implementation structures of international development organisations and presents a 'slice' through these organisations from grassroots to international level, looking for and at links in the international policy process for technology, development and design. Four sectors in the international policy process are examined: corporate design organisations; non governmental; governmental and supra governmental. These sectors are all involved in work that results in physical manifestations of explicit or implicit policy, development projects and products.

The research questions whether international development organisations are aware of design and if so, whether this impacts on their technology policy process in both formulation and implementation. If awareness is there in content, is it there in process? Running in tandem is the question of international development organisations awareness of gender and technology issues and again if awareness influences both content and process. If awareness of design and gender and technology issues converge what influence does this have on policy implementation? The research looks at organisations' symbolic, publicly espoused policy, implicit policy and implementation by individuals, ensuring the espoused policies are seen in context with their policy implementation.

My interest in the research has evolved over a number of years. I was educated as a product designer, have experience of working in development in Sudan and have carried out academic research in the area of gender, technology, design and international policy, all of which have necessarily played a part in shaping my interest. The emphasis has moved from the practice of design and technology to the social structures which constrain or facilitate women's involvement in these practices. An experience of poor development practice and an extensive review of development literature on women and technology have led to the focus on the

international policy process. The considerable body of literature describing projects for women at grassroots level and the equally large body of manuals describing so called appropriate technology artefacts and solutions for development have done little to progress women's lot. The now global terms of "feminisation of poverty" and "feminisation of labour" emphasise the negative impact technology has on many women's lives. Whilst acknowledging that women are alike in some ways and different in others (Reinharz, 1992), my experience and research to date suggests that technology more often disempowers than empowers women in developing countries. It is from this standpoint that the research is approached.

The relationship of women and technology in development is inextricably linked with the concept of international development as a "systemic whole" (Axinn & Axinn, 1997). Clearly the international policy process involves a number of players (Huyer, 1998) at non governmental, governmental and supra governmental levels and these players work with organisational ideology and individual values which impinge on this relationship between women and technology. The research focuses on a problem that many of the international policy players may insist does not exist. Whilst gender and technology issues have been raised in the literature, the prevailing ideology is the gender neutrality of technology (it is also 'nationless' and global). Here Bacchi's (1990) "What's the problem?" approach to policy analysis offers the research a theoretical platform. The problem has to be acknowledged, made visible, before there can be even "inadequate" understanding (Hogwood & Gunn, 1993). In the research, it is me the researcher, making the problem visible.

As the researcher, I introduce product design as an issue in development to the players. Product design may also deny any problem, making similar claims for gender neutrality - after all it is producing inanimate objects which are given identity through use by the consumer, not through design and production. My experience as a product designer, design teacher and researcher emphasised the patriarchal structure that defines technology as neutral on the one hand whilst its ownership, through product design and industry, is predominantly male and consequently highly gendered.

Through the research I intend to emphasise the link between design and technology even where absent from the discourse and praxis. I will indicate the critical role this link plays in facilitating women's access to technology for development. The research draws on Heeks' (1995) observation that technology and social science need to be brought together for successful technology policy in development.

CHAPTER TWO

SITUATING DEVELOPMENT, TECHNOLOGY AND DESIGN

"……the miracle of technology lies not in its physical attributes but in its enlightened application."

Patricia Stamp (1989:53)

Introduction

Nearly forty years ago, Rivkin (1962:170) observed that technology for development must "operate in the whole context of the total human environment". Twenty years ago it was noted that technology and its development is dependent on the cultural and ideological values of the society which produces it (Jequier, 1976; Maisonrouge, 1978). In the intervening years mainstream technology and development programmes have resolutely failed to address the issues and again writers are calling for the acknowledgement of the social character of technology. Smits et al, (1995) argue that changes in culture, social and institutional, must precede technological changes for the successful exploitation of technology. Technology may need to be compatible with culture and society (Zoomers, 1993), but if a gender perspective is not taken at the outset of a project then technology will continue to be compatible with the masculine and women remain invisible. In these circumstances technology cannot be relied on to "liberate" women (Bereano, Bose & Arnold, 1985). The same can be applied to international policy.

Many definitions of technology inform practice and Schwarz (1990) suggests that cultural theory be applied to technology decision making when there are both technical and structural uncertainties. The "non-linear, interactive process" of innovation and technological change is, observed by Smits et al (1995), key for addressing issues of technology policy and gender awareness.

Technological innovation should involve both users and producers (Smits et al, 1995; Hacker, 1992; Everts, 1998) but there is little or no public debate or communal decision making about what technologies are used because current economic and political power structures ensure that debates are foreclosed (Benton, 1994; Beck, 1995). This is evident in development practice where there is an emphasis on market forces providing the impetus for technology innovation. The failure of the market, a narrow vision of the potential of technological change and innovation and "inadequate embedding of technology in society" all lead to the under utilisation of technology (Smits et al, 1995). When this discourse is looked at from a feminist perspective it is evident how far removed women are from processes of technological determinism.

Arguably development is still working in the paradigm of romanticism and the "spectacular" of technology (Debord, 1973). There continues to be a struggle between tradition and innovation and I maintain that this is a particular conflict for women and technology and for organisations working with gender and technology. Women in developing countries have technological artefacts given to them by non governmental organisations (NGOs) and design 'done' for them by Western design consultancies and consequently have cultural codes of difference imposed on them. This clearly reflects Buckley's (1989:260) assertion that "women's cultural codes are produced within the context of patriarchy [which] express the needs of the dominant group [and are] therefore, male codes". A feminist perspective can offer an explanation for the invisibility of women at the production stage and consequently an understanding of "why dominant masculine values are constantly reproduced in the material world" (Attfield, 1989:206). The gendering of industry and production technology is rarely acknowledged (except for the analysis of women as a labour force) and illustrates Calhoun's (1996:457) observation that the false universalism which presents people in "gender-neutral or gender-symmetrical terms" does not acknowledge the highly gendered underlying concepts. This is key to the understanding of the relationships in the research question between women, technology and product design. Additionally, as Hare-Mustin & Marecek (1994:69) point out, the assumption of gender as opposites belies the complexity of the current structure and "shields both men and women from the discomforting

recognition of inequality". The emphasis on industrial production as part of design's "macho value system" (Attfield, 1989) can be challenged by the research.

The literature relevant to the research necessarily covers a number of subjects which exist in isolation or as a sub-set of an area. This review situates development, technology, design and also international policy, as the areas are understood and used in the proceeding chapters.

Development theories

The global capitalist structure in which development continues to operate dictates how and for what technology is used, both in developing and industrialised countries. Although, as Giddens (1984) argues, structure can be both constraining and enabling, the current structure with regard to gender, technology, design and development is one of constraint. The structure may not be external to individuals (Giddens, 1984) but it is a privileged minority who define the technology and development structure

There have been and continue to be many development theories: Marxist: neo-Marxist: dependency; modes of production; neo-liberalism etc. However, despite these and other theories, development continues to fail as empirical research reveals. Large numbers of the world's population continue to live in appalling poverty, deprived of the most basic needs - clean water, sufficient food, adequate shelter. Why the continued failure has been and continues to be, the subject of much debate. Blaming 'internal' factors such as a country's climate and culture, political and bureaucratic ineptitude etc. and seeking to impose modernising solutions have been unsuccessful (Chew & Denmark, 1996, also see Frank, 1996 and Ingham, 1995). There is the argument that development has simply become a drive for global consumerism and that the theories reflect this in their emphasis on economic determinants, particularly modernisation theory (Stewart, 1990; Chowdry, 1995; Hirshman, 1995). Evidence of economic systems alternative to capitalism is, Gibson-Graham (1996) suggests, used by industrialised countries to confirm the

undeveloped status of the 'other'. Alternative development theories, including participation and empowerment, are intended to be 'bottom-up' approaches to development. However, as Brohman (1996) asserts, for true 'bottom-up' development there has to be fundamental change in the global status quo. Slater (1996) points to a crisis and Schuurman (1996) discusses the 'impasse' in development theory arguing for the construction of 'post-impasse' development theories. Concepts crucial to these theories are "power, actors, multi-levelled structure, inequality and diversity" (Schuurman 1996:32) and these tie in with theories of production and consumption, technology and gender. Is it possible to identify a crisis in the use of technology for development in both 'top-down' and 'bottom-up' approaches? Development, Scott (1995) argues, is defined implicitly as markets, nations and productivity and this implicit definition links technology and design to development. Explicitly, development is a global, "world-embracing" issue (Chew & Denmark, 1996:12) involving international organisations at many levels.

What development is

The literature defining and explaining development is vast and as Crush (1995) suggests development is "a most elusive concept". Escobar (1992) describes development as a "powerful and encompassing discourse which has ruled most social designs and actions [of under-developed countries] since the early post-World War II period". That development is multidimensional, necessarily requiring the "reorganization and reorientation of entire economic and social systems" (Todaro, 1993) might be acknowledged but is rarely acted on in practice where the emphasis continues to be put on modernist assumptions, the rational ideal of the global market (see Ferguson, 1996). Development exists within the capitalist world-system where there are producers and non-producers and the driving force is global accumulation (Moghadam, 1993). Keeping the local locked into context-specific understandings may be the role of global development networks (Escobar, 1997) but again there is little evidence of a challenge being made to existing contexts by those implementing the development. As Powell & Seddon (1997) argue, development has become a device for the United Nations, European Union and national governments to assert their interests in the Third World.

Ingham (1995) believes that development should be considered as both "a goal towards which countries strive, and a process which involves causal relationships". However, development is expected to happen in diverse cultural and political contexts and often where those being developed are silenced (Staudt, 1991). Participatory development processes are described by Chambers (1994) and Mikkelsen (1995), participation which aims to facilitate other definitions of development being heard. These processes are criticised by Rahmena (1990) who argues that the concern for people power expressed by participatory action researchers, remains based on the ideologies of the intervenor and development remains an abstract problem of the problematisers. Implementers of participatory development might be neutral in theory but argues Wallace (1997), in practice this neutrality fails to challenge structural issues. The South Commission (1990) argues that true development has not only to be people centred but must achieve what people themselves see to be their social and economic interests. In reality, Alvares (1995) asserts, development seems "more of a con-game to ordinary folk" requiring autonomy to be surrendered in exchange for dependency (also see Sklair, 1988).

Women and development

The failure of development has been particularly apparent for women (Nzomo, 1995) with the phrase "feminisation of poverty" coming into popular usage in the past decade (for example see Moser, 1993; Brodie, 1994; Jahan, 1995). The perception of women as dependants and as needing to be integrated into 'mainstream' development is highlighted and criticised by a number of writers including Papanek (1977), Afshar (1991), Cleves-Mosse (1992) and Jahan (1995). In development as in technology and design, women's knowledge and production are largely invisible (see Jacobson, 1992; Blackman, 1994). El Busha & Lopez (1993) point to the assumed vulnerability of women in development principles and as the network, Development Alternatives with Women for a New Era's (DAWN)(1985) report states, in development equality for women is always perceived in male terms. Mainstream development is itself 'male', with men used as the "paradigm for human development" (Levin, 1988). The androcentrism of this

approach denies women the potential to be change agents in their society (Pietila, 1993) and fails to acknowledge that the fair treatment of women is crucial for positive global development (Inayatullah, 1997).

Androcentrism is the source of entrenched gender inequality and has to be tackled because even successful economic and social development can have mixed results for women (Simai, 1993; Sen, 1997). Scott (1995) argues that "persistent masculine emphases" have informed and continue to inform models of development. Women rarely have the opportunity to define development in their terms (Pietila & Vickers, 1994) and as Nzomo (1995) asserts "universal ideals limit strategies available to women". This may go some way to explain Moser's (1995) observation that women in development (WID) and gender and development (GAD) approaches to projects have "in reality never amounted to much" despite the propaganda (also see Chowdry, 1995).

Mainstreaming gender

The term 'gender' Moser (1995) argues, allows "policy-makers ..to pay lip-service to women". The "pseudo-inclusion" of gender in academic literature (March, 1992) is reflected in practice. In organisations' gendered concepts are rarely acknowledged. The word 'gender' has come to mean women and if not presented as neutral, is presented as parallel, not convergent, to mainstream development (Calhoun, 1996). 'Mainstreaming' or institutionalising gender equity (Goetz, 1997) is a process attempting to address the issues.

Østergaard (1994) draws attention to the dichotomy that special women's projects invariably marginalise women yet genderless target groups are always men. Mainstreaming gender throughout development organisations and project implementation is seen to be a way of addressing this dichotomy. Gender is no longer to be found in a special 'gender' unit, focal point etc. but mainstreamed throughout all departments in the organisation. The assumption is that gender will not be ignored or sidelined because the organisational structure will not allow that

to happen. Why mainstreaming gender may not be an easy thing to accept is discussed by Reese (1999) who suggests that women are scared of losing special gender units and hard won equal opportunities. The concern is that gender expertise will get 'lost' in the macro-organisational structure. There are perhaps two equally, if not more, important factors of concern with the mainstreaming approach to gender in development organisations. The first it that mainstreaming does not encourage the understanding of gender issues as one of "relations of disadvantage" (Jackson, 1997) or as del Rosario (1997:87) puts it, there can be no radical redefinition of "women's claims vis-à-vis men's interests". Gender is still marginalised in organisations argues Wallace (1997) and attempts to mainstream the issues have not resulted in radical change (specifically in NGOs). The second factor is ensuring the involvement of women who are at the receiving end of development, in agenda setting which Beall (1999:78) argues is necessary if international development organisations are serious about mainstreaming in the "context of more equal development partnerships". Evaluating the success of women's participation in projects taking the mainstreaming approach is fraught with difficulties, not least the challenging of cultural mores (Jackson, 1997).

Critical for dealing with the issues of women's relationship with technology constructed by patriarchy, is the fact that mainstreaming restricts rather than encourages the redefining of social structures - technological determinism goes unchallenged.

International development organisations

International organisations "embody and ...perpetuate the relationship of power and understanding of world order" (Knight & Krause, 1995:247). International organisations that implement development are part of this and also part of the "systemic whole" described by Axinn & Axinn (1997:228). As well as being part of this systemic whole, the organisations themselves are made up of individuals all with "different specializations, different values, different cultural backgrounds and different perspectives on the process of development" (Axinn & Axinn 1997:228)(also see Knight & Krause, 1995). These individuals create networks within the organisation and also between external organisations, as Hjern & Porter

(1993:253) say "almost no programme is fully implemented by a single organization". The implementation of policy, Hogwood & Gunn (1993:247) suggest, involves members of organisations who "may have different values, perspectives and priorities from one another and from those advocating the policy". This is an important observation when considering Barrett & Fudge's (1981:11) definition of the implementation process as being a succession of refinements and a "translation of policy into specific procedures and tasks". Who in the networks, make the "successive refinements" and translate the policy into action is a key issue.

Charlton & May (1995) suggest that the structure of development organisations is based on project not policy implementation although there is an indirect effect of project implementation on national policy making. The "project system" (Wallace, 1997) and donor led demands continue to influence organisations and the increasing role played by NGOs in the policy process (Powell & Seddon, 1997). Critical to this is Kardam's (1991:6) observation that policy outcomes are a result of the "interaction between individual choice and structural conditions", both inside and outside the organisation. Additionally to this, any new issues have to fit with the organisation's goals and ideology (Kardam, 1991). International development organisations may argue that they are operating within the rational ideal where, as Stone (1997:307) says this "presupposes the existence of neutral facts - neutral in the sense that they only describe the world but do not serve anybody's interest, promote any value judgements...". However, within the organisations at the level of individuals, Palumbo & Calista (1990:7) note that "trading" happens in policy implementation. Individuals with potentially different values and ideologies respond to issues in equally different ways. Responses range, Palumbo & Calista say, from those who deliberately "undermine" the policy, to those who "advocate more effective ways to achieve the policy's goals, to others who are passive and indifferent...". Wallis, (1997) argues that individuals also operate as part of a "policy conspiracy" to steer the policy process. The concept of "networks" of individuals offers a similar explanation for the implementation process (Hjern & Porter 1993). As Klijn et al (1995:439) observe, individuals in the network are "dependent on each other" and those with resources have the "power to mobilise".

Technology and Development

The ideology of technological solutions for development continues to inform development practice. Goulet (1994) notes that the tendency to emphasise sophisticated technology as the way forward for all developing countries continues. He suggests that developed countries encourage a benevolent attitude to change and are uncritical in accepting the dogma that whatever is new must be better (also see Stewart, 1990). At national governmental levels elite groups are able to intervene politically when decisions are being made about technologies and this leads to inappropriate technologies being invested in (Kaplinsky, 1990; Shaikh, 1986; Mitter, 1997). Paradoxically, direct technology transfer can result in permanent dependency (Cole, 1990; Gyeke, 1997) and yet steady technological development may be an ill-afforded indulgence (Natarajan & Agbese, 1989). The duality in developing countries of sophisticated technology co-existing with poverty is highlighted by Hassan & von Wartensleben (1988). Developing countries are prone to technological dependency because there is no or very little indigenous technology (Banerjee, 1990). The consequence of this is that there can be little tacit technology dissemination (Lall, 1994). The potential for cultural colonialism through technology transfer is great (Goonatilake, 1984) and Yousef (1988) argues that copying technology from developed countries is an "exercise in futility" for developing countries, technologies are needed that meet local and new priorities. The implication is that technology in the West is appropriate and industrial, in the South it is inevitably inappropriate (Cole, 1990). Production technology and skills are correlated with culture, not having either is 'natural'. Technology for development is drawn into the nature/culture dualism.

Abdulai's (1993) argument that the South continues to "ape Western patterns of technology and consumption, regardless of their frequent irrelevance to the needs of the South" is an observation made by other writers (see Slater, 1996; Moss, 1997; Mittleman & Pasha, 1997). Technology in the North is used to both satisfy needs and create wants (du Gay, 1997; Braun, 1994), and although there have been many positive outcomes technology has not solved the problem of poverty in rich countries or the much greater problem of extreme poverty associated with underdevelopment (Braun, 1995). There is a demand in developing countries for

consumer goods and Ranis (1980) suggests a participatory strategy is needed to satisfy basic needs.

With traditional technology associated with the informal sector there is a slow pace of change (Bhalla, James & Stevens 1984), compounded by the fact that the informal sector is where women predominate (Renne, 1997). Innovation may come from a desire to satisfy needs (Biondi & Galli, 1992) but it is only by women having a voice that they can become involved in the process of innovation. Women's prevalence in the informal sector indicates their desire to satisfy needs.

Appropriate Technology (AT)

The range of technologies most associated with development come under the heading of Appropriate Technology (AT). Appropriate technology when applied to development is predominantly considered in terms of hardware and technical change (Stewart & Ranis, 1990). AT can also be a strategy for changing lifestyles, values and political-economic organisation in *developed* countries (Frahm & Buttel, 1982). In contrast, Stewart & Ranis (1990) suggest that AT should offer potential for accumulation and productivity increase in a capitalist consumerist sense. Community based, sustainable development and technology transfer need not be mutually exclusive, AT and high-technology need to converge rather than compete (Davis, 1986; Dudley, 1993). This returns to the issue of democratic participation. Saeed (1990) argues that the application of appropriate technology is based on "ad hoc" visions of culture and vague objectives. Four "philosophies of technology" are identified by Drengson (1982): all technology is good and should be pursued; the love of technology - technology is everything and everywhere; technophobia; and appropriate technology. Appropriate technology "brings the subject and object together in a responsible, reciprocal interaction"(Drengson 1982:109) with no motive to control others. I agree with Drengson who suggests that a "fully mature appropriate technology" realises human creativity and potential. As Giddens (1995:156)) states "humans are more than just tool making and tool using" beings. It is a possible end to rational technology as a dominant discourse and make

explicit Arnold & Burr's (1985) assertion that technology can be used to either "bolster power" or promote alternative structures.

Despite all the manuals devoted to Appropriate Technology solutions, from pit latrines to duplicators, peanut butter processors to fuel efficient stoves, Appropriate Technology has failed to 'solve' development problems. Arguably in many cases it has exacerbated them (see Stamp, 1989). That the appropriateness of technology should be determined by cultural and economic contexts (De Forest, 1980; Ahmad, 1989) can be well argued from a gender neutral stance but becomes complex and potentially de-stabilising when 'women' are introduced. The evaluation of the social benefits of technology is complex (Fransman, 1982) and adding women in as a variable further complicates the process.

Technological determinism

Technological determinism, where technology exists as independent of society and actually causes social change is, MacKenzie & Wajcman (1994:4) maintain, the "single most influential theory of the relationship between technology and society". Technological determinism works on the premise that technology is neutral and Wajcman (1993) suggests that there has been little analysis of technological development that expressly challenges this. Ormrod (1994:44) argues that applying theoretical perspectives to gender and technology which challenge technological determinism "force us to question the content of categories that are usually taken for granted as 'social', 'natural' or 'technological'". Questioning these categories focuses attention on the shaping of technology, giving room to issues of gender roles in technology making (Berg, 1994).

The technology environment has become "aggressive and controlling" (Griffiths, 1985) and as Benston (1992) argues, technology is a language for action. Consequently men's control over technology and their determination to pursue a

technological world view has effectively silenced women (also see Balka, 1997). This combination of paradigm and discourse has sustained the stereotype of women as techno-phobes. This implicit and frequently explicit ideology has become seemingly timeless and self-evident (Hofmann, 1995) and also remarkable globalised. Here technological determinism works in conjunction with biological determinism to sustain capitalist patriarchy (see Haraway, 1995).

Technology is a product of society (Roobeek, 1990), feminist literature explicitly indicates the persistence of patriarchal structures in defining and controlling technology and this is a critical element of the research question. Non-feminist, 'male' literature whilst drawing attention to the lack of awareness of the social shaping of technology and its development (see Schienstock, 1994) consistently fails to address gender issues. The "indulgent belief" in the neutrality of technology may no longer be explicitly acceptable (Montgomery, 1980) but the absence of women in "malestream" technology discourse indicates the androcentrism that is implicit in technology policy. Women have undoubtedly always used technology and often been technology developers but they have not been acknowledged as such (see Rothschild, 1981; Amram, 1986; Rathgeber, 1995). The "man-the-hunter" paradigm has affirmed the hypothesis that men were the first inventors and users of tools despite evidence that women used tools for subsistence production (Mies, 1994). Technology is shaped by the social context within which it is developed and in to which it is placed and therefore cannot be separated from social values (see Montgomery, 1980; Morgall, 1993; Cockburn, 1994).

In development, empirical studies are used to illustrate specific aspects of technology and the effects on women in development projects (see Carr, 1984; Agarwal, 1992; Gamser et al, 1990 etc.). Although, as Kaplan (1993) suggests, it is difficult to ascertain general principles from empirical studies, one observation can be made from these studies, women are passive recipients, affected by rather than having an effect on, technology (Wajcman, 1991). As Wajcman (1993) contends, male power is embodied in the design of technology, the social structures of technology are masculine and the physical characteristics of technology make full use of men's physical advantage. Programmes and projects in developing countries revolving around technology for development reflect this contention.

There may be an awareness that the introduction of technology can cause conflict between men and women and often exacerbates inequalities (Whitehead, 1985; Pietila & Vickers, 1994). The consequence of this is that women are generally excluded from modern technology or the "creation of alternatives" (Rowbotham, 1997). The area of production of artefacts where women are recognised is that of handicrafts. This association of women with handicraft has however, severely limited the development of production technology for this area. Handicraft is traditional not modern and is associated with illiteracy and the margins of economic activity (Renne, 1997). Importantly, as Ranis (1980) argues, handicraft enterprises have potential as a basis of modernised production. There is a cautionary note that if technology is introduced into women's production enterprises, men will take over (Bryceson & McCall, 1997).

The need for women's technology to be simple because of "naturalness" (Everts 1998) substantiates the "myth" that women are afraid of technology (Carr, 1986; Balka, 1997) and is reflected in the emphasis on women as passive users of technology. It may be that the myth is reinforced by a continued emphasis on the hardware of technology for development and the failure to acknowledge the software elements of technology; knowledge, techniques and organisation of production processes, which are key components of women's technology (Appleton, 1993). Certainly governments and Western exponents of appropriate technologies continue to ignore women's tacit knowledge (Lewenhak, 1992) despite technology transfer needing more that just the physical object (Salomon, 1994). However, the hardware of technology needs to have a continued emphasis because it constitutes a major part of economic development. Women's association with the informal sector has resulted in the limited development of production technology (Pearson, 1992).

The gendering of technology has become ideological (Gill & Grint, 1995), and key to the research question, I argue, is that women will only become explicitly involved in the development of industrially produced artefacts when men are willing to challenge the stereotyping of masculinity (Southwell, 1997a). The evidence of phallocentrism is overwhelming where "sexual difference is implicitly negated [and

where] woman is constituted as less than human since she is other to man." (Gibson-Graham, 1996:35).

The research focuses on production and consumption technology, technology in its physical form made for particular purposes (Braun, 1994). This is where product design meets technology. Whilst acknowledging the importance of understanding technology also to be knowledge, processes and activities (e.g. Ormrod, 1994), the use of technology in its physical form for development continues to dominate development practice. Also, to be applied to production, knowledge has to be "embodied" in a physical form (Bhatt, 1980). The control and ownership of technology is power (Wajcman, 1993; Stamp, 1989; Cockburn, 1992) and acknowledgement of this is crucial for the formulation and implementation of gender aware technology policy.

Women as consumers or producers?

Mies (1986) notes that the world is increasingly divided into consumers and producers and that this is having a great effect on Third World women workers. Paradoxically, although women have been ascribed the natural consuming (Attfield 1989) and non-productive role, they are now the principal labour force in many industries. Women do not own the means of production yet are encouraged to become consumers (Mohanty, 1997). Gender stereotyping and the subsequent hierarchy of skills have been used to support the dominant development and technology discourses. Hirshman's (1995:43) description of development as the "offspring of phallocentric institutions and ideology" is visualised in technology and design. Although not writing specifically about gender and women, de Certeau (1984) describes the process of de-skilling which renders women's technological capabilities invisible. de Certeau argues that human skills have been removed and perfected by machines and this has resulted in the 'know-how' being removed from the 'how-to-do'. The 'know-how' then appears to be intuitive or a simple reflex ability "which is almost invisible and whose status remains unrecognised" and as a consequence "... the remaining ways of operating are those that have no legitimacy with respect to productivist rationality (e.g. the everyday arts of cooking, cleaning,

sewing, etc.)"(de Certeau, 1984:69). The everyday arts are of course predominantly women's activities and it is women's tacit knowledge that is seen to be neither productive or rational. In the dominant development discourse women carrying out the every day arts of collecting wood and fetching water are non-productive (Waring, 1989; Gibson-Graham, 1996). If and when technology is offered to women, it is as labour saving tools to make women's unproductive work more efficient (Scott, 1995).

In the technology discourse, technology is for production and industrially manufactured artefacts and women are technologically inept, their creativity and skills ignored (Gamser, 1988). The gendering of skills is also used to defend the essentialism of design and technology where ultimately the "exchange-value" of a product supersedes its "use-value" (Holub, 1992).

Technology policy

Many developing countries have placed an emphasis on policy which encourages the transfer of capital intensive technology (Saeed, 1990) and modernism, as Cooper & Burrell (1988) observe, "puts answers before questions" and for policy this results in policy formulators and implementers already knowing 'truths' (also see Stone, 1997). For technology and design this is a critical observation as the two areas have come to represent modernism.

The South Commission (1990) suggests that countries of the South have consistently under valued the role technology plays in development and that there have been two fundamental problems; a "sense of inferiority in the field of science and technology" and a lack of "commitment to self-reliance in technology". Consequently there are few government policies on technology and where there are policies these are rarely considered integral to the national development plan. As Roobeek (1990) says, the "socio-institutional" structure is ignored in technology policy. The lack of participation in technology policy making and implementation at the grassroots level results in technology's association with the "magic and miracles of the glittering industrialized world" (Maathai, 1995) being sustained. It is arguable that policy-makers as well as the users at grassroots level, also view

modern technology "with a respect and wonder, usually associated with the occult" (Saha, 1990). Consequently the power of those who control technology policy is tremendous. They can decide on the potential applications of innovations and in which technological areas to invest (Ng Choon Sim & Hensman, 1994). Technology need not always be "an instrument of oppression ... and domination" but can be used in both global and local ways to create new links between the individual and the community (Horsman & Marshall, 1995).

Smits et al (1995:271) state that "..technology policy should no longer concentrate primarily on the generation of new technologies, but on the question of how options can be translated into successful products, services and solutions to social problems." They argue that technology, economy and society are becoming increasingly interconnected, that technology policy has the potential to make a difference and that these conclusions have far reaching implications for the design of technology policy at both national and international levels. They emphasise the importance of a user-oriented and broader science and technology policy for development. Technology policy is informed by assumptions of technological development (Hofmann, 1995) and the assumptions of decision makers (Bright, 1979).

Gender and International technology policy

Policy on gender and technology is influenced by ideologies of the relationship of women with technology. One hidden ideology (Danziger, 1995) is that women equal the "natural" and the natural is not worthy of investigation. Consequently, those responsible for making international policy "are freed from even a token consideration of women's experiences and feminist understandings..." (Enloe, 1989:4). I would argue that this is pertinent to technology policy where implicit and explicit technology theories are alleged to be neutral, factual and consequently widely accepted (Hofmann, 1995). Analysing technology policy it is clear that where the "power" is results in the inclusion of some and exclusion of others (Fischer & Forester, 1993). Women at the receiving end of development are accepted as a resource but marginalised from policy making processes (Nzomo, 1994) and this is

very evident in technology and technology policy literature (for examples of women's invisibility see Kaplinsky, 1990; Schienstock, 1994; Braun, 1994; Badham, 1994; etc.).

Technology policy should, Metcalfe (1994:941) says, encourage innovation and the right conditions for private enterprises to develop "superior products and methods of production". However, technology policy formulation is based on Stone's (1997) rational production model where there should be an "orderly sequence of events". This is evident in technology policy intended for development and is compounded by the ideological rationality of technology itself. I maintain that the rational production model continues to inform technology policy formulation despite Badham's (1994) assertion that social issues have been a key concern to technology policy in the 1990s. The evidence for this is the complete absence of gender awareness in technology policy literature. For example, according to Salomon, Sagasti & Sachs-Jeantet (1994) technology development cannot happen if there is no dialogue between "cultural heritage and instrumental rationality" and Braun (1994) points to the influence of social factors in the determination of appropriate production technology, but in neither example is gender introduced as a factor worthy of consideration.

The formulation and implementation of international technology policy involves a number of levels, numerous players and policy is implemented through facts and power (Saeed, 1990; Huyer, 1998). If women are to benefit from technology, they must have a voice and participate in producing the 'facts' and influencing those with power. Technology and technology policy cannot "resolve all dilemmas confronting developing countries" (Rath, 1994:406), however, applying a gender perspective to formulation and implementation could lead to more effective policies. The role of technology policy in women's development can be understood through Grosz-Ngate's (1997) argument that the local is "constituted in interaction with external social forces", grounding the global in the local. As Bernal (1997) suggests, women's experience is rooted in the local but gender constructions are influenced by global contexts and "transnational cultural flows". The importance and relevance of the technology policy of international organisations for women's development is further emphasised. Empowerment of women has to involve

democratic participation (Ferguson, 1996) and this observation clarifies the link between technology policy, design and gender for sustainable development.

Design

The design discourse is "malestream" from both theorists and practitioners (March, 1992). The review of literature suggests that there are in fact far fewer women and certainly far fewer feminists writing about product design than there are writing about technology. The area of design for development and design in developing countries is highlighted by the relative absence of attention paid to these issues by design theorists and practitioners commenting on their practice. An example of this can be found in the first Humane Village journal published by the Humane Village Centre for Compassionate Design in collaboration with the International Council of Societies of Industrial Design (ICSID)(1994). Arguably this should be one publication from the design profession that should tackle the issues of both gender and development. Regrettably however, the text has only two tentative mentions of the Third World and out of 64 contributors, only 5 are women. Waring (1997) makes a similar observation of the journal when she says "..some of us who are half of the members of the [Humane] Village are obsessed with looking for outward and visible signs of inclusion as participants". The lack of women's voices is carried into the second journal. Arguably the study of design is underdeveloped (Bailetta & Litva, 1995), design theory and literature are largely inaccessible to development practitioners. Design is rarely mentioned or discussed as having a role in development.

Design and development

The Western perceptions of design for development continue to be influenced by texts first published over twenty years ago (Papanek, 1971; Schumacher, 1973). Much of what was written still holds true although the tone is moralising and romantic. More recently Whiteley (1993) has reintroduced the concept of the

"socially responsible" designer but this is restricted to issues such as designing pedal-powered washing machines for Brazilian shanty towns.

Writers from developing countries, Ghose (1995) and Pido (1995), acknowledge design as both an ancient activity and an activity of everyday life (see also Gabor, 1986). Ghose (1995:199) argues that the governments of developing countries have to "introduce national design policies that will dovetail with developmental policies, thereby making design an agent of the visual manifestation of the ideologies of development". Acknowledging that there is a need to fit indigenous design to the cash economy, Pido (1995) suggests that design could be used to combine skilled hand production and the national economic interest to "produce consumer goods for ourselves". However, as Kaplinsky (1990:215) argues, trans-national companies now play a key role in "influencing consumer taste patterns in favour of internationally branded consumer products". These transnational products may be given new meanings depending on their environment (Grosz-Ngate, 1997) but an absence of indigenous design capability "makes it easier for hegemonic cultural projects to become naturalized" (Yuval-Davies, 1997:67). The lack of entrepreneurial trade is one cause of under development (Himmelstrand, 1994) and design is an essential component in addressing this (Papanek, 1984)

Clearly there are differences between designing for small manufacturing enterprises in developing countries and designing for industrialised, often international companies. I would argue however, that the similarities outweigh the differences. Considerations of quality, aesthetics, performance and cost of a product apply equally in development and developed contexts where people have a desire to use products (Buchanan, 1995) and need products regardless of race, class and gender. There is the suggestion that insufficient emphasis is placed on product design because of a preoccupation with the "ceaseless creation of new technologies" (Kennedy, 1985). In development the technologies may not be 'new' but there is undoubtedly a preoccupation with technology and as the literature indicates little emphasis on design. An exception here is Wad (1994) who briefly raises product design and development as a technology policy issue. Understanding the role of design is critical to understanding its importance for development, as Dormer (1991) asserts, the role of designers is to package

technology to make it accessible, desirable and useable (also see Bonsiepe, 1995). Therefore design is the interface between technology and people and consequently is in some part responsible for the creation of identities and influencing cultural change (Southwell, 1997b). As technology cannot be discourse free (Grint & Woolgar, 1995), designers have considerable responsibility although Walsh et al (1992) maintain that products are often designed more for the needs of the designer than the user. du Gay, Hall et al (1997:62) suggest that designers can be "defined as people involved in the provision of *symbolic* goods..".

Product design and gender

Overhill (1992:13) says of design that "if you can rap your knuckles on it then its industrial design...[..]..if its limp, foldable or squishy then it falls into some other nebulous category". This may add to the explanation of why gender and women are invisible in 'malestream' technology policy literature. Product design sustains technology as a language for action (Benston, 1992), the gender stereotyping of products goes largely unchallenged from Forty's (1989:63) assertion that "..the differences between the design of manufactured goods .... became the incarnation of contemporary ideas of social difference" including those between male and female. He argues that because these designs sold successfully, they reflected the social construct of gender difference and continue to do so (see Goodall, 1983). Artefacts are undoubtedly gendered (Grint & Woolgar, 1995), however, I agree with Attfield (1989) when she says that design has the power to generate and reproduce patterns of dominance through objects and representations and the designer reinforces the invisibility of women. This ensures the perpetuation of the idea that "certain power relations are merely a matter of taste and culture" (Enloe, 1989:3). Design has striven hard to maintain the status quo with regard to the traditional concepts of masculinity and femininity, male roles are cultural, female roles are natural (Buckley, 1989). This has been achieved not only through the marketplace but also professional practice (Goodall, 1983). Design claims gender neutrality (Smeds et al, 1994) whilst implicitly and explicitly maintaining the woman/nature discourse. As a designer writing in Design magazine maintains - "The most valued

stylists [by the industry] in the next few years, as manufacturers develop smaller, less aggressive, more practical town vehicles, may turn out to be women.." (Evamy, 1996:50; also see Grigson, 1996), presumably because women are naturally smaller, less aggressive and more practical than men.

Not only has patriarchy restricted women's opportunities to participate fully in design but it also influences the cultural codes of design (Buckley, 1989). Product design practice is gender aware only in so far as giving products assumed masculine and feminine attributes for the differentiated markets (Southwell, 1997a). The lack of women designers, suggest Walsh et al (1992) results in the application of tacit knowledge about women users' needs happening only rarely in product design. Similarly there are very few designers with "diverse ethnic backgrounds" (Martinez, 1994). In industrial production where the makers are rarely the same people as the designers, the industrial production processes are also gendered and these processes influence design decisions further entrenching the status quo (Roozenburg & Eekels, 1995; Gomez, 1994). An explanation for this is offered by Hacker (1990) who argues that the imbalance of power and resources results in the design of technology reflecting the desire of a particular class of men. Whiteley (1993) describes this starkly as "naked egotism and brazen ambition" which is further entrenched in 'known truth' by design history's decontextualising designers as heroes (Worden & Seddon, 1995). I argue that product design, as it is currently practised, reinforces patriarchy, further restricting women's participation in technology processes.

Masculinities

Design continues to replicate the "hypermasulinized culture" Gablik (1991) optimistically suggests is coming to an end. Product design presents itself in a definitively, 'macho' masculine way (as does engineering, see Hacker, 1990; Sørenson, 1992). Defending "hypermasculinzed" masculinity (Telford, 1996) in design places the emphasis on technology and technological determinism. Design's masculinity symbolises power (Ramazangolu, 1992) which is mirrored in technology. The idealising of technology is reflected in the idealising of masculinity

(Scott, 1995) and this has important repercussions on the use of technology for women's development.

Participatory design

Design practice is invisible in development - designers are the experts, remaining detached from the user. Of the six core activities identified in design practice by Ion (1995), non are user based or participatory other than a dependence on marketing. Products are designed with an emphasis on technology, designers consulting each other rather than the user and rarely addressing users' actual problems (Landgraf, 1992). Palmer (1996) suggests that the process of design is now based on four aspects: i. the separation of maker and designer; ii. what is to be produced is decided by the person/company commissioning the artefact; iii. mass production of the artefact; iv. a close relationship between the designed object and its economic function.

In the design literature attention is rarely paid to the influence of society on design (Evans, Powell & Talbot, 1982). Design is a questioning activity but Dormer (1993) using the word interrogator, describes the current unequal relationship between designer and user. Product design requires a multi-disciplinary approach (Ulrich & Eppinger, 1995; Roozenburg & Eekels, 1995) but participation of the user is not part of the process. The design process, instead of beginning with form assuming that it will prove suitable to its users, must begin with an explicit consideration of user activities and perceptions (Mitchell, 1995). Human-centred design acknowledges the social and political aspects of the design process (Pain et al, 1993) and the design profession "must look at its practices and values and their implications; and it must look at the condition of society and the world" (Whiteley, 1993:3). However, Walsh et al (1992) point out that it is in fact easier to ignore the wider consequences of design, forgetting the importance of the user, the product environment and social structures (see Reese, 1986). Deforge (1995) asserts that interactive and alternative design results from designers having a "scrupulous respect for culture and diversities" and urges designers to ensure technology is put to honest use and not used to conceal inadequacies. In terms of the research

question, the inadequacies of international technology policy processes are supported by the lack of gender awareness in design. The opportunities for participatory design are currently only available in theory.

The desire for wealth has, argues Lyotard (1994), driven technological innovation and product development. He expresses the opinion that technology is a "game pertaining not to the true, the just or the beautiful, etc. but to efficiency"(Lyotard, 1994:44). The linear model of design practice does not reflect social reality (Buchanan, 1991) and for development, Mittelman & Pasha (1997) respond in a similar way arguing that the fixed, linear path of technology change, from traditional to modern, has ignored the complexity of societies. However, Beck (1995:505) offers a scenario where "freedom *for* technology and societal liberation *from* technology could coincide" facilitating a move from an industry based society to democratic participation. It is this scenario that underpins the rationale for my research question. The nature of the interaction between non-dominating processes and the policy process underpins the research question.

Technology both shapes society and is concomitantly shaped by society although the emphasis may be perceived to be on the former (Noorgard, 1995). The shaping of technology in relation to women's use is grounded in patriarchy, locally and globally (Sørenson, 1992) and is sustained by product design.

Summarising comments and questions

Technology is tied to the rational in the modernity model of development, striving for modernisation through technology and technology policy is driven by this 'known'. Although Braun (1994) suggests that "not many believe that growth in profligate material consumption can go on forever", I argue that the theories of modernity used implicitly in technology, development and design remain static. Feminist theorists in different disciplines have explored postmodernism and offer potential breaks in the circles of modernism and postmodernism (Bordo, 1990; Gibson-Graham, 1996 (economics) ; Haraway, 1990 (technology); Attfield, 1989

(design)). This is described by Benhabib (1990:125) who suggests that the paradigm shift can acknowledge the dangers of meta-narratives and "foundational guarantees but which nonetheless insists on formulating minimal criteria of validity for our discursive and political practices". In development, Parpart (1993) suggests that a postmodern feminist approach can both celebrate difference and recognise the "need for solidarity among all women". Although I agree entirely with this I doubt the need to use the term postmodern to define the position, as Di Stefano (1990:76) argues, postmodernism has "returned us to the falsely innocent indifference of the very humanism to which it stands opposed; a rerun, in updated garb, of the modernist case of the incredible shrinking women".

Issues of race and class become evident in gender and development and are evidenced and emphasised through designed products. Orientalism, observe Childs & Williams (1997:100) "serves to tell non-Western cultures the 'truth' about themselves in a way which is congenial to the West". Plumwood (1993:47) argues that the "process of domination forms culture and constructs identity" and that the "inferiorised group..[..]... must internalise this inferiorisation in its identity and collude in this low valuation...". The construction of the inferior 'Other' is carried out physically through technology (Appropriate Technology) and design (ethnic knickknacks) and seeing is believing.

The research will respond to Schienstock's (1994:1) assertions that there has been limited attention paid "to the social shaping of technology development" and that technology policy "must be newly defined...". A feminist perspective will highlight the attention that *has* been paid to the social shaping of technology but ignored by malestream theorists and practitioners and offer a structure from which to newly define technology policy. I agree with Rothschild (1981) who says a feminist perspective is "freer to explore alternative ideals" etc. for technology development.

Consideration to difference and commonalties in international technology policy influences both formulation and implementation, positively and negatively. I argue that international technology policy is influenced by the stereotyping of masculinity and femininity in and through technology and design. There is an inter-relationship between contemporary development theories and international technology policy

and this effects policy formulation. I suggest that creativity and pleasure in technology and design are important facets of society and need to be considered in international technology policy formulation. The literature highlights an important element of the research question, indicating that technology occasionally results in progress for women but more often disempowers. Analysing international technology policy processes and to what extent gender issues and design figure in policy formulation and implementation is an attempt to understand why. Democratic and participatory processes in policy, technology, development, and design are emerging as alternatives to the dominant models and although there is revealing criticism of participatory processes in the literature, there is potential for good practice.

The literature has revealed the "persistence of masculine emphases" (Scott, 1995) in the discourses of development, technology and design - both at the level of theory and that of practice. Women's tacit knowledge is absent in technology and design as a result of non-participation. Patriarchal / androcentric structures in both technology and design continue. I will argue that the international technology policy process cannot confine itself to "technical questions on which experts can agree" (Danziger, 1995), but has to concentrate on the social shaping of technology through design if women are to be empowered by technology and design in development.

As the literature has shown, the creation of networks or conspiracies by individuals and their organisations results in international technology policy being made through their inevitably complex interactions. The implementation of policy is determined through power structures and ownership of knowledge and as Huyer, (1998) notes, this is key for gender policy. It is also key for technology policy. The research addresses the extent to which international development organisations are aware of design and the ways in which this impinges on technology policy process. By focusing on policy implementation structures it seeks to explore the complexity of international development organisations, the role of individuals, networks and conspiracies.

CHAPTER THREE

METHODS

This chapter focuses on the methodological and epistemological issues surrounding the methods selected for the research. There are a number of parts to the chapter; the feminist framework for the research, details of the methods (data collection and data analysis), including a rationale for the choice of discourse analysis and interviews, a discussion of the organisations used and details of the interviews.

In policy implementation terms, presentation of the organisations from non-governmental through governmental to supra-governmental follows the backward mapping process (see Elmore, 1982) . The implementation of international policy necessarily involves multiple players - individuals and organisations. Combining backward mapping with 'snowballing' data collection and interactive data analysis, emphasises or reveals the role of the individual in the collective policy process.

Feminist framework for research

As the literature reviewed has indicated, the relationship of women to technology and design is frequently rendered invisible in mainstream discourse. In order to address this the research is approached from a feminist perspective to ensure the visibility of women (Gorelick, 1991). Recognising the intrinsic relationship between the individual and society, feminist theory offers a way of exploring the personal and the public that does not isolate the one from the other (Stanley & Wise, 1993).

The research focuses on international technology policy as it affects women living in developing countries. As a white, privileged woman living in the West, I have to acknowledge the position of power that this places me in with regard to both collecting and analysing data. Focusing on macro-policy issues opens the research up to criticism of generalising and perhaps trivialising the real-life situations of the

women recipients of the policy. However, as Currie & Wickramasinghe (1997) suggest, the micro-level 'every day' can be connected to macro-level of social policy. A feminist perspective offers a framework in which to be explicit about personal bias. I am passionate about revealing the androcentricism which is evident in technology and design and how this is constantly replicated through the policy process at the international level. Oleson (1994) maintains that rather than designing out biases, biases can be used as "resources to guide data gathering" and this has influenced the decisions made about who to interview at the outset of the research and which organisations to follow up. It has also ensured that I have systematically sought out writers from different countries, female and male and declared non-feminists.

Critically, Denzin & Lincoln (1994) describe feminist theory as an "interpretative paradigm" which makes "particular demands on the researcher, including the questions that are asked and the interpretations that are brought to them". Within the feminist paradigm there are a number of qualitative research methodologies used. These include content and discourse analysis, in-depth and semi-structured interviews, case studies, action research etc. Key to my use of a feminist perspective is the observation made by Reinharz (1992:4) that "feminist researchers deal with dilemmas that have no absolute solutions". There can be no absolute solution from a study that brings together a number of disciplines.

Research methods

The research asks questions about the implementation structures of international development organisations in regard to their technology policy and gender policy (symbolic and implicit) and looks at links in international policy between four sectors: corporate design organisations, NGOs, governmental organisations and the UN. It also asks whether international development organisations are aware of design. Clearly no single approach is able to answer these questions so a number of methods are used. The research also follows the premise that the research process itself consists of interacting rather than discrete stages; research design, methods of data collection, analysis and 'writing up' automatically suggest one

another (Edwards & Ribbens, 1998). The research uses discourse analysis and interviews leading to the development of grounded theory. These methods are not unique to feminism but feminism provides the perspective (Reinharz, 1992) for their application to the research. The research is examining areas that are perceived to be masculine; technology and design. Male practitioners and theorists predominate in product design and the technology literature that influences policy. The feminist perspective will ensure that the methods used make women visible through highlighting their absence and 'hearing' their voices. The male 'way of knowing' materialises in physical artefacts and technology policy and analysing is "part of the process by which women's oppression is not only described but challenged" (Gorelick, 1991:462). Decisions made about who to interview etc. took into account Stanley and Wise's (1993:220) assertion that feminists should insist that the category 'Women' / 'Men' continues to exist as it is "fundamental to the systematic assignment of positions of super- and subordination in their composing binaries and the underlying evaluation of their relative social, moral, economic worth".

The research requires a flexibility in methodology because of the range of discipline based practice being examined. The premise on which the research question is based is that these disciplines are inter-related, in international technology policy practice and that an understanding of this 'inter-relatedness' is critical for successful policy making and implementation.

Methodological issues

Discourse analysis and depth interviews are the two principal methods used in the research. The symbolic, publicly espoused policy, the implicit policy (see Gill, 1996) and personal responses of interviewees can be related through the discourse analysis of organisations' publications. Discourse analysis can develop 'scene setting' as well as facilitating the search for specific words or terms, for example design is an area that is relatively unacknowledged by development organisations. Depth interviews allow flexibility across the different areas and can respond to the individuals' positions held in the organisations. Depth interviews also allow unwritten, implicit policy to be made explicit by interviewees.

The analysis of the data has to be accessible to the reader and constantly re-evaluated by the researcher. From a feminist perspective, interviews allow the interviewee to be more than a 'subject', there can be a flexibility in approach, taking the specific situation into account as the interview progresses. Having the facility to divert from the prescribed structure if the researcher deems it necessary, is essential for addressing the complexity of the research question. Importantly, the researcher, not the method is in control of the process moving the project forward (Reinharz, 1992).

Reliability and validity

For all research, sampling reliability and validity are important issues. For valid and reliable interviews, interviewees need to give detailed and accurate answers. The reliability and validity of data obtained through interviews relies on the respondent giving open and honest answers. Equally, the researcher has to ensure an openness in describing the research and the role the respondent will play in the analysis and possible conclusions.

Interviews allow a considerable degree of control over sampling (Potter, 1996) and in the case of research involving individuals representing large national and international organisations, identifying appropriate interviewees is particularly pertinent (Morse, 1994) and potentially problematic. Decisions taken by the researcher about who to interview need to be clear and open. The sample needs to be "information rich" (Patton, 1990) but the availability of interviewees is determined less by the researcher and more by the relevant organisation's structure. Senior management may have direct control over who is to respond to the request for an interview and consequently has a role to play in the reliability and validity of the interview. The researcher needs to acknowledge this and ensure that the interviewees' position within the organisation is made clear in the analysis. This is particularly pertinent as the research also explores issues such as coalitions and conspiracies.

The use of a variety of sources for data and a variety of methods to obtain and analyse data ensures triangulation and as Reinharz (1992) has noted, this is particularly pertinent to feminist research where there is a "desire to be open-ended and to take risks" as well as to be thorough in approach. The research used triangulation as a means of obtaining "multiple voices" (Smith, 1996) but not to declare absolute truth. An important concept for the research is Janesick's (1994:215) "interdisciplinary triangulation" (added to Denzin's (1978) four basic triangulation types; date, investigator, theory and methodological). Janesick suggests the use of other disciplines can broaden the "understanding of method and substance" in a single discipline.

Rationale for choice of methods

The research is looking for and at links in international policy for technology, development and design. There are large numbers of development organisations working internationally in development and with technology. Discourse analysis of widely available publications issued by a number of organisations provided a place to start for the first-phase of the research. Reasons for choosing discourse analysis and depth interviews are considered and brief descriptions of the methods presented. There are a large number of texts providing further details of the methods for example see Denzin & Lincoln (1994) and Richardson (1996).

DATA COLLECTION

As the researcher, I have looked for a number of issues at a theoretical level and evidenced at a practical level including the visibility / invisibility of women and assumptions regarding the social structuring of technology. Discourse analysis of publications provides a 'first-phase' in the research leading to decisions of 'second-phase' interviewing i.e. who to interview and why. It also played a critical part in developing interview protocols for semi-structured depth interviews. At the formulation stage of the research, formalised case studies were not planned as a research method. However, the aspect of qualitative research that allows the

researcher to respond to immediate and unexpected opportunities resulted in case studies 'growing' out of the data collection (see Patton, 1990).

Discourse analysis

The research uses the term 'discourse' to mean forms of talk and texts that occur in interview material and published texts, it is part of cultural and social practice and externalises or constructs the world (Marshall, 1994; Gill, 1996). The discourse analysis of text whether interview transcripts, documents, published texts etc. is explicit. An implicit form of discourse analysis is carried out when listening to the interviews, during the interviews themselves and the process of transcribing the tape recordings. Discourse in the form of published documents is intended to publicise the work of the organisation beyond the confines of the organisation itself. In this form, the discourse is aiming to be both persuasive and give credence to the organisation (Gill, 1996; Atkinson & Coffey, 1997). A feminist discourse analysis highlights the gendering and de-gendering of issues, legitimating 'women's issues' in some contexts and rendering them invisible in others (Warren, 1988). If, as Gill (1996) suggests "social life is characterised by conflicts of various kinds", a feminist perspective on the texts will highlight the conflicts of interest with regard to technology and gender at the organisational and international levels, local and global levels.

Key to the decision to use discourse analysis as a research method is Gill's (1996) observation that "People use discourse in order to do things". The research is looking at four sectors; corporate organisations involved with design, NGOs, governmental organisations and the UN and their complex inter-relationships. All are involved to a large extent with work that results in some physical manifestation of explicit or implicit policy: development projects and products. These are the result of discussion, conversation, policy documents etc., all evidence of discourse being used to do practical things: for example Watson, (1996) highlights the fact that texts in some form are involved in almost every human activity.

NGOs have, suggest Charlton & May (1995), attempted to become involved in making and influencing policy at government level in the countries in which they are working - moving away from project work. This has been of limited success but say Charlton & May, the indirect effects of projects on policy is underestimated. This is pertinent to the research question and the method because it highlights the importance of discourse in the making and implementation of policy. Here text can be used as a topic for study (Potter, 1996; Gill, 1996), which offers an approach avoiding the use of micro-projects for empirical study. The research is an international study of the issues and uses text to ensure a macro-approach in seeking links between gender, development and technology at an international policy level. The research uses discourse analysis to study "how specific actions are accomplished"(Gill, 1996) by the UN and NGOs particularly because the policy process may further entrench the social structures in which technology is both situated and formed. Text can be examined in different ways and this will depend on the interests of the examiner (Gill, 1996).

The focus on discourse as social practice (Potter, 1996) is valid for researching the United Nations and its formulation of policy on gender and technology because the UN publications assume a position of 'knowing reality', and as Atkinson & Coffey (1997) say "textual communicative practices are vital" to this process. The research looks at the descriptions of women and industry presented in the UN texts in order to see how these are used to maintain the global economic capitalist status quo. An analysis of the "devices and procedures through which factual versions are constructed" (Potter, 1996), was carried out on interview transcripts from design consultancies, NGOs, governmental and UN organisations.

Depth Interviews

The espoused explicit policy of the organisations involved in the research is evident from publications and documents. Interviews with people working in the organisations are necessary to 'get at' the implicit policy and the reality of policy implementation (Forester, 1993). In an interview situation responses made by employees to an organisation's publicly espoused policy can provide a "narrative

truth" that can make sense of complexity (Kaplan, 1993). Interviews enable both the researcher and respondent to explore issues freely.

Depth interviews are used for gathering detailed information from individuals rather than groups, these interviews can be very structured using pre-determined questions through to the unstructured. In unstructured interviews the researcher has no fixed questions rather a number of areas to be covered, here the progress of the interview is largely determined by the responses of the interviewee. The depth interview can also be described as semi-structured, here the presence of an interview protocol devised by the researcher before the interview, provides prompts to ensure areas thought important before the start of the interview, are not forgotten. Importantly, the semi-structured interview offers flexibility with minimum but essential pre-determination (Fontana & Frey, 1994; Potter, 1997). Responses to prompt questions can be built on and enlarged and these can offer a more detailed picture than might be obtained from formal, pre-structured interviews. It is also possible to take external influences into account - the working environment, seating arrangements, body language etc. These are obviously secondary to the transcribed interview but non the less help the researcher 'situate' the discourse. In all approaches to interviewing, the interviewee will be influenced by who the interviewer is (Miller & Glasser, 1997). Crew (1992) emphasises the importance of both parties speaking the same language and clearly, establishing a good rapport is essential for successful interviews (see Fontana & Frey, 1994). It is here that my experience of working in development as a designer both facilitated access to designers and development practitioners and elicited an openness in their responses to, what were for some, difficult questions.

The research used the semi-structured form of interview because it enables the researcher to be flexible in both getting answers to specific questions and finding out what people actually think. Issues could be explored and answers built on in order to form a bigger picture. The resulting data are not constrained by preconceived notions on the researcher's part.

Interviews can get in-depth information from individuals working in large, often faceless organisations and the flexibility in questions asked can respond to issues

raised by the interviewee. Responses can also be made to very personal views held by individuals, building up a bigger picture of the issues than that simply presented in an organisation's publications. Semi-structured, depth interviews allows the emphasis of the interview to be adjusted through the research whilst maintaining consistency of areas covered. This is important for research involving areas not often explicitly brought together e.g. design, technology and gender.

Depth interviews can happen at the 'first phase' level of research along side discourse analysis of publications and help establish the grounded theory supporting the research (see later for more detail of grounded theory). I decided to have two phases of semi-structured interviews. Data transcribed and analysed from first phase interviews informs the development of interview protocols for the second phase, providing 'rich' materials and an interplay between data and conceptualisations (Pidgeon & Henwood, 1997; Henwood, 1996).

Interview structure

A semi-structured interview format was used for the depth interviews. Here a series of general questions, derived from the research question, are formulated but the specifics are dependent on the direction of the interview. The structure of the interview is also dependent on the direction the interviewee takes its, questions not necessarily asked in the order considered at the outset. The interviewee will often answer more than one question in a single response or an issue will be discussed in a way that makes a change in question order more logical. Following the direction taken by the interviewee can ensure that the interview flows more easily and can also result in broader discussion of the areas of interest. Areas not incorporated in the original subject guide but relevant to the research may also be raised (see appendix 1).

Main subject areas were identified for the interviews with some difference between organisations and individuals (listed in appendix 1). Clearly the same issues were referred to but the emphasis changed depending on organisation, individual roles,

projects etc. The emphasis changed over the course of the interviews to account for material and ideas generated from previous interviews and publications. As noted above, the interviews were semi-structured and the main subject areas presented in appendix 1 are not verbatim as asked of the interviewees.

Obtaining samples for first-phase and second-phase interviews

The implementation structure and power of international policy involves development organisations of differing sizes and with different specialisms. The research recognises that interviewing one or two individuals from one organisation cannot be said to be representative of that organisation and consequently it is essential to choose individuals who are in a good position to "justify or falsify" the hypothesis. Critically, Axinn & Axinn (1997) point to the "systemic whole" of organisations operating globally and the holistic view testifying to the interactions between these organisations. The research identified development organisations which explicitly interact to implement international policy (e.g. as donor, project implementer, a combination of the two) and took a 'slice' through from global to local level. An important validator for the use of individual interviews is Axinn & Axinn's (1997) assertion that a holistic approach has to recognise that organisations are made up of individuals with many differences - cultural, specialisms, values, perceptions of development etc. and that their interaction is basic to understanding. After an initially spontaneous process of identifying potential samples, a "snowballing" process (see Patton, 1990) was established and this is described in detail in the section on international development organisations (see figure 1).

Design organisations

The International Council of Societies of Design (ICSID) was contacted as was the UK Design Council, the latter stated that its work is solely nationally based so the organisation was not pursued further. ICSID was contacted via the internet during

both first and second phases of the research and some literature was received outlining the organisation's ideological stance. Clarification of the Council's role in policy formulation was made at the interview stage with designers and is discussed further in Chapter 4. Product design is predominantly a private business/ commercial activity and three UK based design consultancies who work on international projects were contacted and agreed to interviews. The Seymour Powell consultancy was involved during the first-phase, identified because of the designer Richard Seymour's public involvement with issues surrounding the lack of women designers (published in design journals and spoken on BBC1's Women's Hour) and their high profile "Third World" exposure.

The founder of BIB Design Consultancy, Nick Butler agreed to participate in the study and 'A' design consultancy. The four interviewees were offered anonymity, two from 'A' consultancy desired this because of the sensitivity of their experience with a widely available product on the 'development' market. The founders and designers of BIB and Seymour Powell both have international reputations and felt no need for anonymity (see table 1).

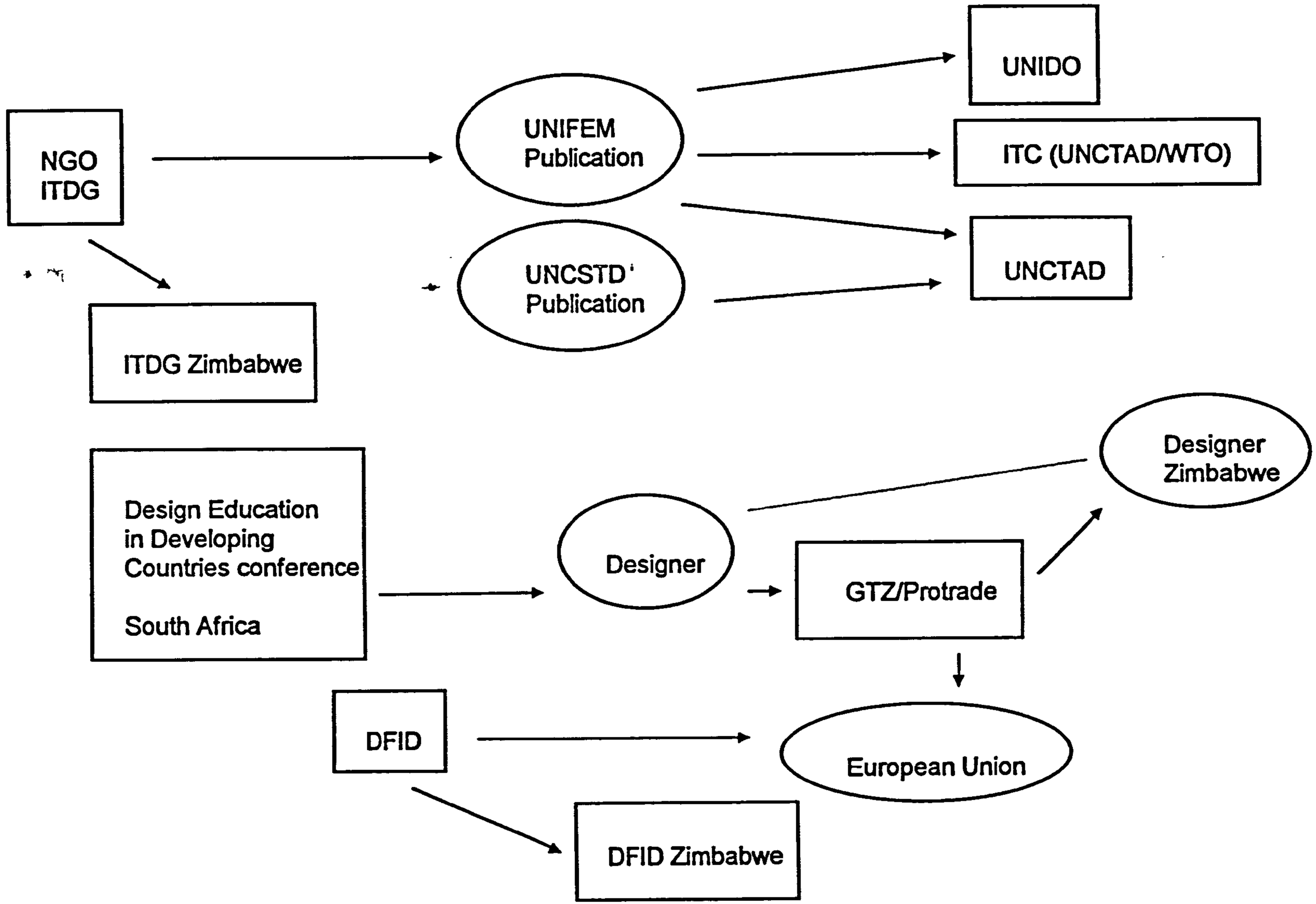

Figure 1: 'Snowballing' - International Development Organisations

CONSULTANCY	GENDER TECHNOLOGY DESIGN	CONTACT	RESULT
Seymour Powell UK	Espoused concern with lack of women in design from co-founder and designer. Product design consultancy working internationally, recent project carried for India (motor scooter). National and International reputation. Undertook BBC television series to highlight importance of product design for economic success	Richard Seymour, Co-founder and designer	Agreed to interview
BIB Design Consultants UK	Product design consultancy working internationally, with national and international reputation. High percentage of design work done for medical equipment, low public profile work.	Nick Butler, founder and designer	Agreed to interview
'A' Design Consultancy UK	Small product design consultancy with international clients. Recently involved in designing a product for developing countries	Co-founder and designer (male) Co-founder and design manager (female)	Both agreed to be interviewed. Designer to part at the start of interview and then said he thought the Design Manager had more to say on the issue of design and gender. Requested anonimity because of potential sensitivity of material in relation to recent project

Table 1. Design Consultancies interviewed

The International development organisations

As a first step in mapping the complexity of the implementation structure the non-governmental development organisation, Intermediate Technology Development Group (ITDG) was identified as being internationally recognised for its work in the field of technology and development. Equally relevant, but perhaps less well known, is the work it has done (both practice and research based) on gender and technology issues. On the strength of the organisation's explicit commitment to these issues, the Gender & Technology Expert and the Chief Executive (CEO) were formally approached.

ITDG agreed to further involvement in the second-phase of the research and the organisation became a case study as a result of permission being given to carry out interviews across the organisation's structure and in two locations. This presented the opportunity to explore bottom-up or backward mapping policy implementation in-depth (see Stake, 1994), who suggests that case studies can be utilised by both practitioners and policy makers because they are an extension of experience). Interviews were organised with staff in the Zimbabwe office involved in two projects dealing with small manufacturing enterprises, production and technology and both with gender identified as an issue by the organisation. In the UK, staff involved in product development and policy formulation agreed to be interviewed. A total of ten staff were involved in the research, representing five programmes / projects plus the CEO (see table 2). Documents pertinent to the projects referred to in the interviews were obtained and examination of these is presented alongside the interview analysis (see table 3).

NGO	GENDER TECHNOLOGY DESIGN	CONTACT	RESULT
Intermediate Technology **IT UK**	Internationally recognised NGO focused on technology for development. Has a Gender & Technology Expert and acknowledges gender & technology issues in its publications (international readership). Offices in Bangladesh, Kenya, Peru, Sri Lanka, Sudan and Zimbabwe	Gender & Technology Expert (female) Chief Executive Officer (male)	Interviews with both Gender & Technology Expert and CEO in the first phase of the research. Informal interview with the Project Manager, Small Enterprise Unit (Zimbabwe) (male). Agreement for the organization to participate in depth for the second phase. Second phase interview with Gender & Technology Expert who arranged interview with the Technology Policy Officer (male)
Intermediate Technology Consultancy **ITC/IT UK**	part of IT providing consultancy to NGOs, governmental and UN organizations. Does work with Gender & Technology Expert where considered relevant	Managing Director (male)	Interview with Managing Director who invited ITC's Business Improvement Manager to join the interview during the process
Intermediate Technology **IT Zimbabwe**	Implements IT projects in Zimbabwe. First and second phase interviews in the UK indicated relevance of two projects currently being formulated and / or implemented dealing with production technology and potentially design. Gender highlighted as an issue by the Gender & Technology expert	Project Manager (SMEs) Social Science & Policy, Small Enterprise Unit Formal introduction to the Director (male)	Interview with Project Manager (SMEs). Interviews with staff of the Light Engineering Project formally agreed through the Technology Policy Officer (UK)

Table 2 . Non Governmental Organisation interviewed

NGO	PUBLICATION / DOCUMENT	CONTACT
Intermediate Technology **IT UK**	Discovering Technologists: Women's and men's work at village level. Second Draft 1998 Do It Herself - An international programme on women's technological knowledge and innovation 1995-1996 Intermediate Technology Annual Report 1997	Gender & Technology Expert, IT UK
Intermediate Technology **IT Zimbabwe**	Women in the Manufacturing Businesses in the Informal Sector. External Consultants' Report for the Light Engineering Project 1997 Technological Capability and Enterprise Development in Zimbabwe. Project Proposal 1997	Gender & Technology Expert, IT UK Project Manager, Social Science & Policy, Small Enterprise Unit, Harare

Table 3. **Non Governmental Organisation - publications and documents used for discourse analysis**

For governmental level organisations two countries were chosen. The UK Department for International Development (DFID) was contacted and the then recent change in government meant a new White Paper on development. I needed to have a 'local' case study to examine the local presence of the implementation structure and the 'snowball' technique was utilised again during my attendance of a conference on design and development in South Africa during the first-phase. This resulted in contact being made with a Zimbabwean product designer working for a handicraft in Africa programme in Zimbabwe. The programme is formulated and implemented by Protrade, a division of the German Agency for Technical Co-operation (GTZ - Deutsche Gesellschaft für Technische Zusammenarbeit). The Europe Africa Co-operation for Handicrafts (EACH) programme is funded through German bi-lateral aid and the European Union (see table 4). EACH programme publications and documents are discussed in detail in Chapter 5 (see table 5). The first-phase research explored the complexity of interactions between organisations, the forward and backward linkages which inform policy formulation and implementation. For the second-phase of the research requests for interviews were sent to the appropriate departmental heads. The response from DFID and GTZ were straightforward in that there was a clear line of management and involvement of individuals in specific projects. The European Union was unable to help and referred the research back to GTZ's handicraft programme in Africa.

GOVERNMENTAL ORGANIZATION	GENDER TECHNOLOGY DESIGN	CONTACT	RESULT
German Agency for Technical Cooperation **GTZ/Protrade**	Female, Zimbabwean product designer, design education in Italy now practising in Zimbabwe. A very rare combination! Directly employed by GTZ/Protrade for the EACH project designing handicrafts	International Design Consultant **EACH**	Met at conference on design in developing countries, Pretoria, South Africa during the first phase of research. Introduced EACH project to the research and agreed to be interviewed if GTZ/Protrade gave permission.
German Agency for Technical Cooperation **GTZ/Protrade**	trade promotion division aims to increase competitiveness of small and mid-sized businesses in developing countries, gives advice on product development. Implements EACH project, explicit involvement with product design and development, employing designers. Joint funding with European Union	Project Manager, Europe Africa Cooperation for Handicrafts **EACH** (female)	Project Manager agreed to be interviewed but not available at time, arranged an interview with the Junior Project Manager (female). Informal interviews took place at the EACH exhibition stand, trade fair, Frankfurt with the Junior Project Consultant (male), International Design Consultant (female) and Executive Director Craft Export, Ghana (male)
Department for International Development **DFID UK**	Mainstreaming gender issues in organization. Formulates gender policy and implements projects dealing with technology. Donor agency funding Intermediate Technology	Head of Social Development Agency (male)	contacted after a number of telephone calls trying to establish where in DFID technology *and* gender policy might 'happen'. Agreed to interview and suggested contact be made with Social Development Advisor & Field Manager Zimbabwe (female)
DFID Zimbabwe	Implements DFID policy and programmes	Social Development Advisor & Field Manager	Agreed to interview and arranged informal interviews with the Private Enterprise Advisor (male) and Assistant Engineer Advisor (female).

Table 4. Governmental Organisations Interviewed

GOVERNMENTAL ORGANIZATION	PUBLICATION / DOCUMENT	CONTACT
German Agency for Technical Cooperation **GTZ/Protrade**	Arts & Crafts, EACH News 1997	Project Manager and Junior Project Manager (both female)
	EACH project Design Consultancy, Ghana - Report on fact finding and preparatory mission May 1997	Report carried out by design consultant for Ghana, recieved from Junior Project Manager
	Design Consultancy EACH - terms of reference for designers	requested from Junior Project Manager
	European Union's EACH project financing proposal	European Union Desk Officer, Zimbabwe
Department for International Development **DFID UK**	Eliminating World Poverty: A Challenge for the 21st Century. White Paper on International Development 1997	HMSO
	Examples of WID / Gender Projects October 1997	Head of Social Development Division

Table 5. Governmental Organisations - publications and documents used for discourse analysis

The first-phase interview with the NGO ITDG's Gender-Technology Expert revealed links with two United Nations organisations, UNIFEM and UNCSTD, and indicated their involvement with gender and technology issues. The UNIFEM connection was followed up through the World Wide Web (WWW) and a survey carried out on the activities of UN organisations in the area of gender and technology obtained. This publication provided data for the second-phase interviews, indicating which UN organisations were most involved in gender specific programmes and policy with regard to technology, industry, small manufacturing enterprises and potentially design. The publication also has contact names for the relative departments (see table 6). The link with UNCSTD indicated the relationship between individuals within organisations and the relationships between organisations at different levels of international policy. Here the ITDG interviewee, the Gender-Technology Expert, had been directly involved as an expert in an UNCSTD/UNCTAD publication. This publication is a critical work for the understanding of gender, technology and development and key to the discussion of explicit policy formulation and implicit implementation. Also during the first-phase a literature search indicated that UNESCO had a publication, part of which addressed gender and technology issues. Publications from UNIDO and the World Bank are also included in the discourse analysis (see table 7 for publications).

For the second-phase of the research with the UN requests for interviews were sent to the appropriate departmental heads (as with the governmental organisations). Individuals in UNIFEM, UNESCO, UNIDO, UNCTAD/ITC and the World Bank were contacted. UNIFEM, UNESCO and the World Bank were unable to give direct help principally because of logistics of time and place, a constant difficulty / variable with undertaking qualitative research. However, their publications and espoused policy regarding technology and regarding gender are critical to understanding international policy issues - emphasising the validity of discourse analysis. Requests for interviews were positively received from UNIDO in Vienna, and UNCTAD/ITC in Geneva resulting in six individuals being interviewed representing four different areas of the organisations' work.

UN ORGANIZATION	GENDER TECHNOLOGY DESIGN	CONTACT	RESULT
United Nations Conference on Trade and Development **UNCTAD**	Pioneering in promoting the issue of women & technology; implicit concern with women & technology Secretariat for the gender working group of the UN Conference on Science & Technology UNCSTD	Chief, Technology Programme (male)	Response from the Director of the Division on Investment, Technology & Enterprise Development (female) proposing an interview with the Secretary to UNCSTD (male)
United Nations Industrial Development Organization **UNIDO**	Unit for the Integration of Women into Industrial Development formalised 1986; Unit part of the Human Resource Development Branch at time of interview; responsible for definition of gender policy in UNIDO; Medium - Term plan 1996-2001 recognises importance of women to industrial development	Chief, Unit for the Integration of Women into Industrial Development (female)	Positive response to interview and supplied brochures outlining the Unit's activities. Chief left UNIDO before interview took place; interview with Unit's Officer-in-Charge and Industrial Development Officer (both female)
International Trade Centre **ITC/UNCTAD/WTO**	UN focal point for technical cooperation with developing countries including product development; technology defined to include product design, adaptation & development, traditional production for trade. Gender & technology issues integrated where relevant	Director, Division of Technical Cooperation Coordination and focal point for Women in Trade Development (female) Chief, Market Development Section for Manufactured Products and focal point for science & technology issues (male)	Director no longer in post due to restructuring, referred to the Coordinator for the Uraguay Round, Division of Trade Support Services and considered to be the gender focal point (female) Chief unavailable, referred to Senior Market Development Officer (male)

Table 6. United Nations Organisations interviewed - with comments of UNIFEM Review 1997

UN ORGANIZATION	PUBLICATION	CONTACT
United Nations Development for Women Programme **UNIFEM**	Review of Policies and Activities of UN Organizations in the Field of Gender, Science and Technology, February 1997	Economic Empowerment Programme Officers (both female)
United Nations Educational, Scientific and Cultural Organization **UNESCO**	World Science Report 1996 Ten year plan of action for the development of crafts in the world 1990-1999: Crafts - methodological guide to the collection of data.	
UN Conference on Science & Technology **UNCSTD**	Missing Links: gender equity in science and technology development 1996	Contributor and consultant, UK (female)
The World Bank	Africa can compete! Export opportunities and challenges for garments and home products in the European market 1996 Technological capabilities and learning in African enterprises 1995	First author of both World Bank Discussion Papers, interested in research but unavailble for interview (male)

Table 7. United Nations Organisations publications used for discourse analysis - with comments of UNIFEM Review 1997

Why Africa and Zimbabwe?

The research , although not country specific at the defining level, focuses on Africa and Zimbabwe. On a personal level I have a particular empathy for Africa, the result of living and working in Sudan. The continent of Africa is made up of some of the world's least developed countries, developing countries and those with extremes of wealth and poverty. Zimbabwe is a developing country that has a reasonable infrastructure, a manufacturing base and the work of development organisations in the country can go beyond the level of meeting the most basic of basic needs (e.g. water, food and shelter) to consider income generation and technology for production. There is an absence of formal design institutions outside South Africa (the only African country with representation in ICSID), but a recognition that design is important to the continent's development. This is evidenced by the bi-annual national and international conferences on design education in developing countries held in South Africa; the EACH project operating in a number of African countries including Zimbabwe; and Intermediate Technology's projects in Zimbabwe. I was able to trace the policies of ITDG, DFID and GTZ as they were implemented locally.

DATA ANALYSIS

The discourse analysis and interviews were carried out within the process of grounded theory. The term "grounded theory" was originally used to describe a theory that is "generated in the course of close inspection and analysis of qualitative data" (Henwood & Pidgeon, 1994:21). Strauss & Corbin (1990:23) summarise grounded theory as being "inductively derived from the study of phenomenon it represents" and as such it requires a systematic approach to data collection. The data collected was subjected to a continuous process of coding. The procedures involved in grounded theory compel the researcher to question their "own voice" as well as listen to those of others and the process reveals an internal logic and philosophy. Strauss & Corbin go on to propose that grounded theory can have a particular relevance to policy makers because it can influence their understanding of an issue, situation etc. Importantly, grounded theory is not about individuals but about determining processes and what happens in given situations, linking the micro level to the macro level and this is pertinent for the exploration of international policy implementation.

Analysis of depth interview data

Each interview was tape recorded in its entirety resulting in "highly detailed and publicly accessible" data, critical for the issue of reliability (Peräkylä, 1997:203). Transcripts were produced and read to check for accuracy and omissions. A second reading was done, notes made in the margins and coding introduced to highlight and locate phrases, paragraphs etc. The analysis of the first-phase interviews was used to test the questions raised in the research proposal and the preliminary discourse analysis of the United Nations publications was used similarly. This analysis illustrates a number of commonalties in qualitative research described by Miles & Huberman (1994:9). These are:

1. affixing codes to a set of field notes drawn from observation or interview;

2. noting reflections or other remarks in the margins;
3. sorting and sifting through these materials to identify similar themes, phrases, relationships between variables and commonalties;
4. isolating these patterns and processes and using them in the 'field' for the next phase of data collection;
5. gradually elaborating a small set of generalisations that cover consistencies found in the data;
6. using literature and theories to challenge/confront the generalisations.

The analysis looked for process and content significance, networking and power versus symbolic policy and outcomes, success and failure. As themes were identified, 'bins' were created into which data was placed. The identification of themes and the creation of bins was a cumulative, fluid process, for example as the analysis of first-phase interviews informed the analysis of second-phase interviews so first-phase analysis interviews were re-visited and data analysed in light of issues, concepts etc. that had arisen in the second-phase. Huberman & Miles (1994) formalise this process describing it as the 'interactive model' of data analysis. A third reading identifying generalisations, commonalties and conceptual issues across all interviews was carried out and the coding used to group appropriate data (quotations) together in the bins. The final analysis consisted of a reflexive process constructing chapters according to relevance and drawing on the appropriate data.

Memos and notes were made throughout the analysis to reflect thoughts and developments (including new literature, updated World Wide Web pages etc.)

Presentation of data

As Miller & Glassner (1997) emphasise, the interview process, data analysis and presentation all result in only parts of the research 'story' being told. As they note, there are numerous levels of presentation and it is the researcher who decides what story will ultimately be told. I make use of the first person where appropriate,

specifically where I have played a "crucial role in shaping the data" (see Webb, 1992:747). This emphasises the role of the researcher, a key concept in feminist research. To ensure the voices of those interviewed are heard, quotations have been used selectively but extensively. The quotations also illustrate the interconnectedness of the issues being explored. Throughout the presentation of the data analysis interviewees are referred to by their job title rather than the ascribed code (tables 8 - 11 link the ascribed code with the individual's title). This situates the material, building up a complete picture whilst maintaining a degree of confidentiality.

The results of the interview data analysis (first- and second-phases) are presented in four chapters which reflect a mixed backward mapping: Design consultancies; non governmental organisation; governmental organisations; and inter governmental. Although the research process did not follow this structure rigidly, it reflects my initial starting point for the research question i.e. the relationship between design and technology for development and the gender issues therein.

Results of data drawn from the organisations' publications and documents are presented alongside the results from the interview analysis, ensuring that the organisations' espoused policies are seen in context with their policy implementation.

SUMMARY

This chapter has shown why and how discourse analysis of publications and interviews were chosen and why and how the interviewees and organisations were chosen. How the data was analysed and presented is also shown. Borrowing Miller's (1997) phrase "building bridges", the research seeks to build bridges between the different disciplines of design, technology and development through the exploration of international policy from a feminist perspective.

The arrangement of the chapters themselves is part of the method and relates to a section of the research question looking at international policy links. The chapter discussing the design organisations is placed first, 'setting the tone' for the discourse which follows. Results from all the stages of the research have been integrated in the whole and the following chapters consider the findings.

code	JOB TITLE	ORGANISATION	sex
DE1	Richard Seymour, Co-founder and Designer	**Seymour Powell** Design Consultants UK	m
DE2	Nick Butler, Founder and Designer	**BIB Design Consultants** UK	m
DE3	Co-founder and Designer	**'A' Design Consultancy** UK (confidential identity)	m
DE4	Co-founder and Design Manager	**'A' Design Consultancy** UK (confidential identity)	f

Table 8. Design Consultants Interviewed - also see Table GTZ/Protrade

code	JOB TITLE	ORGANISATION	sex
NG1	Gender & Technology Expert	IT Intermediate Technology UK	f
NG2	Chief Executive Officer	IT UK	m
NG3	Technology Policy Officer -Manufacturing	IT UK	m
NG4	Managing Director	IT Intermediate Technology Consultancy (ITC) UK	m
NG5	Business Improvement Manager	IT Intermediate Technology Consultancy (ITC) UK	m
NG6	Project Manager (Small Manufacturing Enterprises SMEs)	IT Social Science & Policy, Small Enterprise Unit Zimbabwe. Harare	m
NG7	Project Manager (Light Engineering)	IT Light Engineering Project Zimbabwe. Harare	m
NG8	Team Member (Light Engineering)	IT Light Engineering Project Zimbabwe. Harare	f
NG9	Workshop Supervisor	IT Light Engineering Project Zimbabwe (Service Centre). Harare	f
NG10	Workshop Technician	IT Light Engineering Project Zimbabwe (Service Centre). Harare	f

Table 9. Non Governmental Organisation Interviewees

code	JOB TITLE	ORGANISATION	sex
GO1	Junior Project Manager	**GTZ/Protrade** Europe Africa Co-operation for Handicrafts **EACH**. Frankfurt	f
GO2	Junior Project Consultant	**GFE** Private Consultancy contracted to GTZ/Protrade **EACH** project. Frankfurt	m
GO3	International Design Consultant	**GTZ/Protrade EACH** project. Frankfurt	f
DE5	International Design Consultant, Zimbabwe	**GTZ/Protrade EACH** project Zimbabwe. Harare	f
GO4	Executive Director Craft Export, Ghana		f
GO5	Head of Social Development Division	**DFID** Department for International Development. UK	m
GO6	Social Development Advisor	**DFID** Field Manager Zimbabwe. Harare	f
GO7	Private Enterprise Advisor	**DFID** Zimbabwe. Harare	m
GO8	Assistant Engineer Advisor	**DFID** Zimbabwe. Harare	f

Table 10. Governmental Organisations Interviewees

code	JOB TITLE	ORGANISATION	sex
UN1	Officer in Charge	**UNIDO** Unit for Integration of Women into Industrial Development. Vienna	f
UN2	Industrial Development Officer	**UNIDO** Unit for Integration of Women into Industrial Development. Vienna	f
UN3	Senior Market-Development Officer	**ITC/UNCTAD/WTO** International Trade Centre (Market-Development Section(manufactured products). Geneva	m
UN4	International Consultant (Products)	**ITC/UNCTAD/WTO** International Trade Centre Market-Development Section(manufactured products). Geneva	m
UN5	Co-ordinator, Uruguay Round Programme	**ITC/UNCTAD/WTO** International Trade Centre Division of Trade Support Services. Geneva	f
UN6	Secretary to UNCSTD	**UNCTAD** Division on Investment, Technology and Enterprise Development. Geneva	m

Table 11. United Nations Organisations Interviewees

CHAPTER FOUR

DESIGN ORGANISATIONS

It was necessary for the research to see how conscious design organisations were of international policy. As has been indicated in the literature, design is the interface between technology and the user and consequently has a key role to play in facilitating women's access to technology. Examining the awareness of the role of design by international development organisations in relation to their technology policy and gender policy raises the question of whether design consultancies are involved in designing for development. Also pertinent is the gender awareness of the consultancies. Understanding the approach designers take to development, gender and technology may offer greater understanding of the perceptions of design held by development organisations. The exploratory phase of the research indicated that development organisations are limited in their understanding and use of design, often perceiving it to be superficial and marketing driven rather than associated with technology and meeting basic needs. Where design is mentioned in development publications it is as a skill necessary for reaching export markets and a skill lacking in developing countries. For design consultancies however, design, is by their nature, central to their existence and process.

The three design consultancies presented below responded positively to being interviewed, expressing interest in the research. The consultancies all work internationally, designing products for companies based in 'other' nation-states linking them to global markets and the global implementation structure. The consultancies have been involved in design for development to a greater or lesser extent and consequently relate indirectly to development organisations. One consultancy presented its design work for an Indian motor scooter manufacturer on television and has been publicly on record discussing women and design issues. Two principle issues are discussed in the interviews: women's involvement in design and the perception of designing for development.

Gender and design

Ignoring the social structuring of gender is also necessary for the credibility of the (male) designer. The presentation of technology does little to debunk the myth of the 'natural' bond between it and masculinity and women's knowledge is rarely legitimised (Balka, 1997). For design, male product designers have given themselves the status and power to define (Goodall, 1983) what it takes to be a designer and possibly, as Selle (1995) argues, design is itself an invention of designers. Thinking about the way technology is presented the male 'A' Designer says; *"the language and the terminology used in certain computer magazines and that goes for all sorts of technology as well..[..].. Stuff for Men and you know, at the back there's like phone numbers and porno websites and stuff..[..].. so the more I think about it I begin to see what you mean, maybe it is, technology is presented in the wrong way and maybe that's putting some people off."(DE3/1)*. Design also chooses to present itself in a definitively masculine way resulting in a profession where women are in little doubt that they are far from welcome (this is also noted in the women and engineering literature, see Sφrensen, (1992) and Hacker, (1990)). As the female 'A' Design Manager suggests not being welcomed; *"..makes it that much more difficult [for women] so you'd have to be very, very determined..[..].. we don't know peoples' names, they don't get the credit or they don't get high enough up the tree"(DE4/16.1)*.

The 'A' consultancy is small in relation to BIB and Seymour Powell but there is a gender balance in the design team which is recognised as not being typical of design consultancies. The 'A' Design Manager says the consultancy; *"..don't have a specific policy its just when we've been recruiting, of the people who've come along the women have always been nicer!"(DE4/14.1)*. Both Seymour Powell and BIB fudge an answer when asked if they have an organisational gender policy. Both indirectly claim an implicit gender policy based on equality and gender neutrality. Positive discrimination is one approach and a generalised 'every one is important' another. When asked whether his consultancy has any policy on gender, Richard Seymour claimed that they *"actively, positively discriminate when it comes to the selection of designers, towards women and still it isn't enough.."(DE1/1)*. However,

at the time of the interview there were no women working as designers although Richard Seymour claimed that *"its quite unusual for us because there's usually at least one..[..].. the other interesting thing is that all the other female designers we've had in the past have actually been interested in gathering experience by moving around"(DE1/4.3).* Women are responsible for their invisibility.

In response to the enquiry about the existence of a gender policy in the BIB consultancy, Nick Butler said *"There's always been a given in my life and everyone here in the practice believes it, everyone, ..all the people in the studio right the way through to the cleaners. Everyone is important. I don't care what they do, to me they're all important"(DE2/1.1).* He goes on to express *"a difficulty with [gender] and I'll tell you why... I very often shock people by saying that the designer, gender apart, is a hermaphrodite and its true. I'm torn all the time in terms of the things I personally work on, and I know that people in the studio, the girls and the boys, that you have to put yourself in other people's shoes or situations"(DE2/1.2).* At the time of the interview the organisation had three women designers (Dutch, German and Japanese) but this did not represent a gender balance in the design studio.

"we've got a bunch of hermaphrodites upstairs"

Product design is different from other areas of design because of it's overt association with technology. It is therefore overtly masculine in the terms that technology has been structured by patriarchy and production is controlled by patriarchy (Mittleman & Pasha, 1997). Control of technology is power, control of products is also power (Hacker, 1990). In industrialised countries, the female Design Manager suggests that in product design *"There aren't any good [*female*] role models..[..]. that hasn't really happened in product and product is different [*from other areas of design*] whatever people say, it is the peculiar associations with manufacturing and technology.. do make it more difficult for women to get in which I still find it very difficult to fathom quite why it is such a peculiar trap..."(DE4/15.1).*

Male designers work with the assumption of commonality of experience as "an adequate model of the typical user" (Jaques, 1982:42). The responses given to a female interviewer asking male designers questions about women highlight Spike Peterson's (1997) observation that adding women exposes the exclusion of women and androcentrism. The male designers' perception of gender as being opposites allows them to ignore inequalities (Hare, Mustin & Maracek, 1994) and to continue with the belief that women are different but equal or indeed "immaterial to the business of designing" (Goodall, 1993:59). They are happy to continue with their presumed knowledge of 'woman' confident that when the interviewer has left they will not have to think about it again.

Having to put oneself into another role is a common theme in the design interviews, declaring the ability to think oneself (as a man) into being a woman. The confusion that surrounds this is clear. In reality it is impossible but because there are so few women product designers, men have to do what they cannot do. Nick Butler suggests that designing for women challenges male identity. *"I mean any of the guys in the studio, ask them, there's a huge need for a more balanced team because all the products we work on are for all sorts of needs and purposes and usually they're to do, not all the time but yeah, but with feminine needs. And I think its crazy and so you've got this bunch of designers, we've got a bunch of hermaphrodites upstairs who actually have to go through some great catharsis and sort of crisis in their life every time a product, you really do, you have to cast yourself in other people's shoes so to speak, to mix my metaphors but you do have to try to do a mind bender"(DE2/3.1).* There is a link here with designing for development and the romanticised notion of the Third World 'bush'. Designers are able to cast themselves in a multiplicity of roles (without significant research), because the very nature of designing is to be sensitive to 'others', romanticism indeed. The confidence with which the male designers assert their 'right' as professional designers to design for everybody did waiver when challenged and indicates an ambiguity in their espoused ideology. Perhaps they recognise the struggle that has gone into achieving and maintaining masculinity but are happy for the status quo - the social construction of masculinity - to relieve of them of the responsibility of change (Ramazangolu, 1992).

Gibson-Graham (1996:35) suggests "in the presence of phallocentrism, sexual difference is implicitly negated". In product design, the sexual difference is not only between male and female but also between hetero- and homo-sexual. Different masculinities are denied (Hearn, 1987), hermaphroditism being the only remaining option. Seidler's (1993) observation that men have to conform to a fixed male social role or be thought deviant and abnormal is clearly illustrated by the product designers and their profession. Regardless of the (male) designer's natural sensitivity, Nick Butler says that *"there's a whole bunch of people out there who literally force themselves into straight jackets that they may agree with.. its bizarre, its bizarre. We need more female product designers, that's the simple equation"(DE2/3.2)*. He goes to say that in other areas of design for example fashion and theatre, men are able to; *"go to the other gender side in terms of their..[sexuality]."* but this is not acceptable in product design because it is on the macho side of masculinity. Rather he has to; *"... cast myself in the role of what could a woman think of this product, its a real mind bender..[..].. I think a product designer is continually casting themselves in that role.. its no wonder there are so many screwed up product designers around"(DE2/4.1)*.

Claiming to being gender sensitive is a clear way of getting round the issues, male designers can in fact become women because of their "fallacious belief that they can represent the universal" (Martin, 1985:35). As Nick Butler says; *"..I really do, in some projects and some products, have to put myself into another role. And really try and get my mind round because I'm not a woman, actually I take advice, there are lots of women here..[..].. So I think a designer if they're good, any good, should be able to put themselves into a very difficult situation...[..]...sounds weird, I'm literally having to put myself, cast myself as a woman in terms of the product that used.. but if I have talent as a designer I should be able to do that..[..].. A woman should be equally able to do that if they're any good as a designer"(DE2/2.1)*.

The three male designers interviewed all expressed the view that being designers was qualification enough to design products for women. Being sensitive and doing basic research is sufficient to avoid failure. The female Design Manager points out that it is frequently all male design teams who do design for women and the 'A' male Designer responds; *"I don't have much time for whinging feminists..[..].. for*

whinging anybody. The point is there are some fundamental, basic logical approaches to product design and sometimes the actual control of these projects are in the wrong hands. Its not in the hands of the people who ultimately will use these products. Its in the hands of people who think they know what these people want and that's always been the case"(DE3/4.3) (see Landgraf, 1992).

I would argue however, that men's identity is challenged only up to the point where the designer's ego 'steps in' and convinces him that he is suitably equipped to design panty liners and bras. In a 1994 journal article, Richard Seymour describes one gender creating new products for sole use by the other gender as the "ultimate nonsense". Nevertheless, in the interview he says that when the consultancy takes on a product that will be used predominantly by women or entirely by women; *"we don't go "Right this is going to be used by women, go and find yourself women"; the funny thing is we still.. I'm perfectly happy to say so, I still consider myself sufficiently sensitive in the way that I go about doing what I do to research what I'm doing sufficiently positively and thoroughly that I will be able to determine what is right and best... still a residual sense that there should be a woman involved in it"(DE1/3)*. The designer acknowledges that a better job would (only) probably be done if fifty percent of the designers in the consultancy were female but he is still able to get round the issue saying; *"as a designer I tend to compensate, so I've got to sensitise myself in a way to these needs..[..].. because a designer doesn't design for himself, he designs for somebody else..[..].. but at the same time we're always left with a nagging feeling that you've missed something"(DE/3)*. The nagging feeling does not stop Richard Seymour taking on the design of panty liners (the television advertisement for which showed a female designer coming up with the ultimate product), and bras with no or very limited female involvement (designers or users). He says; *"I'm personally involved in the design of a new bra.. using new technology.. designing a revolutionary new type of bra and as I embark on it I'm asking myself should I be doing this, am I the right person to do this and come back with the answer yes..[..].. I'm sufficiently methodical and sufficiently interested in getting it right that I will ask all the right questions and do the thing properly and at the same time I wont be able to wear it!"(DE1/4.1)*.

It is the existence of women on the design team that makes gender visible, this seems like an obvious comment but it is this very obviousness that ensures it is ignored and male designers can continue to assert their sensitivity when challenged about gender issues in product design. Women on the team whether as designers or managers also challenge the status quo of the clients. The 'A' Design Manager says; *"We don't often get products where people say this is a product for women and we definitely want women on the team. Some times it does, we're doing a product at the moment..[..].. where the company owner has said well this is a product which is used probably eighty percent by women householders therefore its very good that you've got women designers. And there have been times when a couple of us have been sat at meetings where all the other people on the client's side and the engineering teams have been men and have been talking about the housewife and what they think she does and what kind of person they think she is..[..].. on occasions we've had to say we actually think you are talking rubbish, we use this product, we don't believe you do.."(DE4/13.2).*

There are women product managers in companies whose presence again makes gender issues visible as the Design Manager notes; *"I remember [a product designer] saying once that when they were doing a lot of work for Clairol and they had a female product manager on the hair dryer range saying you really ought to have women on the team because this is a product for women"(DE4/14.1).* The designer referred to is Richard Seymour who is the first to claim his abilities to be sensitive to women's needs and this was not an experience he discussed with me during our interview. This example so clearly illustrates what happens when women are not physically involved in the design process, gender issues are ignored. Claims of gender neutrality are made and the 'user' is sexless. Gender is only neutral when the male designers are working on products for women or predominantly women, (and even then they are working at a 'macho' presentation of themselves), they are happy to exert their 'macho' masculinity when the product is considered to be aimed at the male consumer.

Designers' difference - frosty versus friendly

Male identity is confirmed by the masculine qualities of technology, dynamic interactions and complexity. Technology is gendered through verbal language, the emphasis on "dominance, brawn and power" (Balka, 1997), products are gendered through a visual language emphasising the masculinity of technology. Baudrillard's (1996) comment on the "gadgets and gizmos" obsession with technology is illustrated in design by Richard Seymour who says this *"was a complete nonsense but it represented a male stereotypical fascination and a forced fascination, you know, gosh! military, militaristic hardware..[..].. the more frosty and difficult to come to grips with object was some how quite a potent symbol and quite exciting"(DE1/2)*. This clearly illustrates the theory that technology is a language of action (Benston, 1992), and implicit in this is women's simple mindedness and their failure to appreciate the excitement of technology, Richard Seymour (1994), discussing a design done by a woman says "it took a mind unimpressed by technological precedent and stylistic pomposity". The power of technology is associated with the military by Richard Seymour, opposing the 'natural' mind of the woman (see Plumwood, 1993; Aronwitz, 1990).

At a macro level Baud (1993) indicates that if a new technology makes the task more complicated women are edged out and if simplified, women are recruited more extensively. This is replicated in design by male perceptions of female product design where they feel able to identify with an agenda different to their own. As Richard Seymour says; *"When I look at very successful products that have had a very powerful female involvement, the agenda is entirely different"(DE1/3)*. Describing a particular product designed by a woman Richard Seymour says that when men talk about it *"they talk about its friendliness, its quirkiness and its simplified control"(DE1/3)*. This makes the designer think *"well why should you need anything else anyway"* but this is easily got round by the argument that *"there is still an enduring sense that certain objects need to demonstrate a kind of technological.. some kind of.. you know.. I'm hard, I'm difficult therefore I'm good' stuff which I find intolerable..[..].. first of all we try to get rid of all that but that doesn't mean... there are certain things that do require a dynamic identity.. the*

market is male and we know in advance the kinds of forms that are necessary"(DE1/3).

The male designers find ways of getting round gender issues under the guise of professionalism and the inherent qualities required to be a product designer i.e. sensitivity to all users and the market. The nature / culture dualism can be identified in the discourse, Richard Seymour seeing no paradox in his righteous claim that when the consultancy does take on women designers; *"..we deliberately ensured we didn't put these designers into stereotypical roles, i.e. we didn't say right you do the tampon while we do the motorbikes"(DE1/4.3).* This goes back to Gibson-Graham's (1996:35) assertion that "in the presence of phallocentrism, sexual difference is implicitly negated" (also see Avi-Ram, 1989). Where women designers are visible it is as a result of their difference with Richard Seymour observing that *"there is a difference and its not just an issue of social conditioning and its not an accident, I think its actually part of an organic and social combination..[..].. most of the women designers I know are much more interested in the ease of function of an object, trying to humanise an object to make it appropriate for the way its going to be used"(DE1/2).* Women are considered to be naturally more caring and understanding although paradoxically Richard Seymour makes much of his sensitivity and ability to empathise with others I.e. women. However, despite assertions of sensitivity towards the user which enables men to design gender specific products, the female Design Manager has observed; *"women designers are more user oriented in their thinking, they empathise more easily. They tend to be driven less by ego, it varies obviously.."(DE4/13.1).* The Design Manager has found that in a small company, having more women designers results in a less competitive atmosphere; *"its just pleasanter, less fraught working atmosphere, less hierarchical in practice..[..].. I think often in male design teams people get very hierarchical because some body at the top is always taking the credit for the whole team"(DE4/13.1).* Women, she feels *"..tend to respond better to the whole idea of collective problem solving rather than the English inventor who stands up and says eureka!"(DE4/13.1).*

Designing for development

As private businesses the consultancies have to make money and obviously this influences the design projects they undertake. Designing for development is seen as a good cause rather than a money maker. It is undertaken to counter the cynicism of designing for capitalist, developed consumerism which is the main source of employment for the consultancies. The rationale for doing any design for development is tied to the emotional response of wanting to make a "difference" to people's lives and therefore a indicates a broad "social responsibility" element of their policies. Designers use development to escape consumerism whilst the dominating development theories and practice emphasis the need for economic modernisation and market developments (at global and local levels), (there is extensive literature covering this, see Scott, 1995; Chowdry, 1995; Hirshman 1995, for review and critique). There is an ambivalence expressed in the interviews towards undertaking design for development. It is morally right but commercially risky yet "design is essentially about people".

The 'A' product design consultancy had recently undertaken the design of a product aimed originally at developing countries, principally in Africa (funded through private enterprise). They were keen to do the project, as the Designer says; *"almost bit their hand off because we were at that point so tired of, feeling a bit jaded about the work we were doing... it was enjoyable but it was all going one way. It was all about markets and consumers..."(DE3/5.3).* He went on to say that they felt the project offered; *"..an opportunity to do something which actually meant something, which you felt maybe wouldn't change people's lives but would maybe in some small way affect them and help them and that's all you need really, nothing else counts.."(DE3/5.4).* The male Designer said that *"the reason why we did it for almost nothing because that we felt the project has a reason that was apart from what we're used to from everyday work..[..].. a different objective"(DE3/2.3).*

Integrity is one different objective where this is associated with the product for developing countries being a piece of 'appropriate technology', reflecting the work of Papanek (1971/1985) and Schumacher (1973/1987). Design for developing countries is designing for the 'real world' and consequently basic and cheap

products (cheap aesthetics as well as price) are needed . The Designer says he; *"..always felt that the product needed to be, have some, much integrity. It was almost not being influenced by what we used in the West but it should be entirely addressed to the people who are out there in the field"(DE3/2.3)*. The 'A' female Design Manager added that *"the interesting thing is, I think it was, it was designed as a very, very basic product and it had to be very, very cheap to make and use the commonest plastics..[..].. we regarded it as a kind of Land Rover product that had no aesthetic pretensions at all and just had to survive and do the job"(DE4/2.4)*. However, according to the designer, the product has now come to *"look like a Western consumer product. It doesn't have the integrity which we felt it should have from the beginning. It looks like a more expensive product"(DE3/2.3)*. The product has lost integrity because the aesthetics reflect Western consumerism as opposed to 'string and bamboo' appropriate technology, challenging the romanticism of 'the bush', The Designer and Design Manager both felt that the integrity of the original intention was lost *"in the opportunity to make money - its not surprising but one feels slightly sorry"(DE4/3.1)*. Apparently, they feel that design for development cannot be carried out in the capitalist market structure

Disappointment is expressed that the project did not live up to their idealised vision of what design for development ought to be. In fact the product is still part of a development organisation's aid package and sales of the product in the West subsidise the selling price in developing countries - adding to the Western consumers' feel good factor. There is a perceived conflict with a product for development becoming a cult product in the West (the product has achieved some considerable status evident by its display at the Victoria and Albert Museum, UK). According to the Design Manager, the product has now; *"kind of gone down market so it doesn't really succeed happily in any category because it no longer looks like it was designed for... you know.. the bush.."(DE4/7.4)*. The design team had not been to the 'bush' so this is based on romanticism and their illusory idea of what the bush is or rather should be, *"at no point during the process were we talking about Western consumers at all and we were pretty much talking about a purely African market too"(DE4/11.1)*. Margolin (1995:277) discusses the product environment where "everything surrounding the product becomes part of identity and value", here the same product is placed in two very different environments and becomes

identified with culture (museum) and nature (Third World). The interesting thing is that the product has in fact sold extremely well in the UK as well as very successfully in the developing markets. The designers failed to see this potential because they were caught up emotionally in their imagined reality of designing for development. This might point to a typical feeling in Third World product / technology development expressed by the Designer; *"we did feel charitable towards the project"(DE3/6.1)*. The emotional needs of the designers are being responded to, not the users' physical needs (see Walsh et al, 1992). There is a demand for consumer goods in developing countries, as Ranis (1980) points out, involving these consumers in the design process could go some way to satisfying basic needs.

Design for capitalist consumerism might lead to a consultancy's success but it fails to address the romanticised 'other's' needs. Unlike designing for capitalist consumerism, it is apparently necessary to have both a global and political conscience to undertake design for development, to become a socially responsible designer (see Whiteley, 1993). As Richard Seymour says, designing for development; *"requires a greater global conscience, a political conscience as well..[..].. its getting to the point where I think it would be more appropriate for me to be starting to be doing this sort of thing. I love the idea of doing another range of luggage and all the other stuff that I get to do, that's great, but it isn't actually making this a better world"(DE1/11.2).* The designer and founder of BIB Design Consultants, Nick Butler, suggests that *"the passion for any designer is that they care about people"(DE2/7.2).* There is an underlying remit to how his organisation is run; *"...which may be wrong which doesn't matter, well it does matter because everyone is involved..[..].. but I do have an underlying philosophy about what BIB does..[..].. design is a moral act carried out within social and economic conditions... I'm trying to keep the morality of BIB very high.."(DE2/7.3).* Both designers suggest an involvement in human-centred design as discussed by Pain et al (1993) but it is difficult to see any participatory approaches in their practice other than marketing and focus groups.

The romanticism of the 'other' is continued in Nick Butler's assertion that there is huge potential for design in developing countries although the consultancy's

experience is actually with the so called "tiger" economies and "newly developed" countries. He expresses a romanticism about the 'other's' understanding of design which is not reflected in the reality found in the literature or this research. He says; *"there's not the same barrier there as there is here because they recognise that design is a discipline, a skill, an expertise, a creative skill, is an essential part of the equation"(DE2/5.2).*

Arguably trans-national companies are influencing cultural taste on a global scale (Kaplinsky, 1990) and design and technology clearly play key roles in this phenomenon. The trans-global product is seen as a positive thing, part of an international language although indigenous culture has also to be preserved. There is a control of global aesthetics at all levels, from consumer durables to handicrafts. The 'other' can be manipulated through visual culture (Childs & Williams, 1997; Chowdry, 1995). Consequently, the preservation of a developing country's culture is at the mercy of the trans-national companies and international design, as are gender constructions (Bernal, 1997). As Nick Butler says; *"to me design has always been a truly international language..[..].. what's happened these last twelve years is that products have become global. Of course everyone has to preserve their own culture ..... what's happening to a lot of products instead of them being dedicated in terms of 'I want an Italian light fitting or French chair' the technology has allowed the thing to become trans-global"(DE2/4.2).* Attempts by indigenous designers and writers about design to influence national design through practice and policy (see Pido, 1995; Ghose, 1995), are stymied by global capitalist structures. The reality of this is succinctly described by the female 'A' Design Manager; *"if one were really cynical one would say that the First World doesn't really want the Second and Third World to develop themselves because where will we be left if we allow African countries to design their own [products]? They wont buy ours."(DE4/19.1).*

Perhaps because being successful is equated with financial profit and designing for development is associated with charity, undertaking design for development lacks credibility and is associated with 'the alternative' and being unprofessional. Being very successful and high profile might ensure a designer is not ridiculed by the profession but there is still too high a risk that this will happen. Richard Seymour said that as a student involved in design for development he was not taken

seriously *"but now thinking about it, if I turned my attention back to that then I will be taken seriously"(DE1/6.1)*. However he starts to express doubt and suggests that design for development might be so 'alternative' that there would be a; *"risk for me doing that because working within the field that I do, I can be unconventional and yet professional at the same time and moving off into that direction because..[..].. oh he's crossed the boundary rather than bringing the object into the credible arena. Its more like Richard's moving out of the credible arena and into the incredible"(DE1/11/12)*. It is clearly easier to ignore the user, product environment and social structure (Walsh et al, 1992; Reese, 1986).

The product designed by 'A' consultancy has received considerably coverage in the design press but this was not a positive experience for the design team. As the Design Manager says; *"...one lets it go because criticism...[..].. after the event is always difficult to deal with but you would expect commentators from the design community to have some grasp of the context in which [the product] was prepared.."(DE4/3.1)*. This comment indicates the lack of awareness of development issues by the "design community".

International networks

The design consultancies interviewed work as independent entities but can be involved in national and international design networks through the national Chartered Society of Designers (CSD) and the International Council for Societies of Industrial Design (ICSID). Despite involvement with either one or both of these organisations, the design consultancies showed little overt recognition of the international policy setting in which they worked.

Two consultancies interviewed made similar responses when asked about their involvement with ICSID. Both responses suggest that ICSID is remote from the real practice of product design. Consequently, even if ICSID, as a representative of design networks, were to formulate policy on gender, technology etc. these will remain symbolic and only implemented through individual commitment. The Design Manager of 'A' design consultancy was a council member of the Chartered Society

of Designers (CSD) *"and the only things that came up with ICSID was how expensive it was to be a member"(DE4/16.2)*. She sees ICSID and its publications as*" the inevitable collision between idealistic consultants and people who work on the theoretical side of the profession who want to institute change and see the potential for change, running up against people who are working in a commercial situation who don't have time or the resources or even the sort of mental space to, to develop what still seems a theoretical, idealistic concern.."(DE4/17)*.

In the commercial situation, in privately run consultancies the role of policy is dependent on the importance placed on it by the owners (owners of the organisation are also the owners of policy). New issues have to fit in with the owners' goals and ideology (Kardam, 1991). Even in a democratically organised consultancy like 'A', the Design Manager accedes that it is; *"...difficult to take off the blinkers and have time or money to explore ideas that don't seem entirely relevant at that particular moment. So I think that the struggle is trying to make those kind of initiatives relevant to people, make them purposeful enough.. I don't think ICSID are doing that, have achieved that... I think they feel very remote, and I think that most people even within the CSD felt that the governing body of ICSID was on par with the governing body of the Olympiad you know, they weren't people you actually know or met or ever recognised as being practitioner in one's own business..."(DE4/18.1)*.

In 1996 ICSID held a conference on 'humane design' discussing issues for the future of design with a focus on the environment and user. The emphasis on the humane mirrors the call for fundamental changes in the global status quo from some development writers (for example Todaro, 1993; Brohman, 1996; Schuurman, 1996; etc.). In design however, the perceived conflict between theory and practice can be used to justify ignoring the existence of ICSID and ignoring international discussion on the role of design for global change. Nick Butler declared that *"What really gets up my nose is that a lot of these things happen and occur and they manage to get funding for them and it goes ahead and many of these conferences and debates and discussions are run by people who are not doers and, and I'm afraid unless the things that are organised involve people who*

are doers nothing will get done because its just an excuse to go off and have a nice time"(DE2/10.1). Potential policy makers are easily distanced.

FINDINGS

The structure of two of the organisations is clearly patriarchal. In Seymour Powell the fact that women designers do not stay is not seen as a failure of the organisation but rather a characteristic of the women. The organisation may claim positive discrimination and to value difference in it's designers but the reality does not reflect this espoused policy. Nick Butler refers to the "boys" and "girls", although boys do grow up to be guys - and hermaphrodites. Design is closely associated with technology and this technology is highly gendered. Designers may be aware of gender issues but are unwilling to address these in ways other than the superficial. In fact designers are largely successful in not addressing issues, either in the practice of design or for users.

Perceptions of developing countries are based on the Third World 'bush', the romanticised 'other' is not a proactive consumer but a passive recipient of aid. Consequently, designing for development is a charitable activity at odds with product design's normal association with capitalist, consumer markets. Designing for development is too different from the norm and has to be done as a charitable activity, as the annual "Seymour Powell Project" or when the drive to do something more meaningful finally becomes too strong to ignore. There is concern with how their peers see them, designing for development may be seen to be "deviant" or "abnormal", pushing the boundaries of ascribed masculine and feminine characteristics (Seidler, 1994). Design for development needs to be caring, alternative, technologically simple, all attributes ascribed to women designers. Design feminised for development is acceptable but not for mainstream capitalist (or patriarchal?) consumerism. It is difficult to see Gablik's (1991) optimistic end of hyper masculinised culture in the discourse. Design in its broadest sense, as Martin (1985) asserts, can define new possibilities worth aiming for. However, attempts by an international design network to discuss the role of design for global change are

problematic because of the perceived relationship between theory and practice. The association of design with capitalism, technology with masculinity and development with charity reflect the nature / culture dualism and the gender stereotype associated with them, including the feminisation of "other" men. This observation helps to position design as it may be understood by development organisations. Design organisations play an essential role in the implementation of technology orientated policy. Although there is a lack of overt international policy links there is a symbolic presence in the implementation structure. Design sets, or at least reinforces, the "agenda" for all other actors - the underlying ideologies of masculinity and patriarchy against which the policy and its supporters have to struggle.

CHAPTER FIVE

NON GOVERNMENTAL ORGANISATION

Intermediate Technology Development Group (ITDG) UK & Zimbabwe

Intermediate Technology Development Group (ITDG) is a non-governmental organisation internationally recognised for its work on technology for development. The 1997 Annual Report states that "almost all the technology being developed today is designed to meet the demands of industrialized countries". The same gap exists that Fritz Schumacher was aiming to fill in the early 1970s when he founded ITDG (Barnett, 1997). The organisation is based in the UK and works internationally with offices in Bangladesh, Kenya, Peru, Sri Lanka, Sudan and Zimbabwe and is therefore firmly linked into the international policy implementation structure. The organisation supports a specialist publication company and a specialist consultancy, Intermediate Technology Consultants (ITC). The consultancy has undertaken projects for DFID, EC, FAO, ILO, UNIDO and UNIFEM. Of fifty nine projects (1993-5), thirteen were explicitly for gender and / or women, for example UNIDO commissioned seven projects for women. The consultancy does not have a specific gender consultant but asks the Gender-Technology Expert to participate. ITDG is funded through a core grant from DFID (currently being reduced), DFID's Joint Funding Scheme, the European Union and various charitable bodies.

ITDG acknowledges the gender dimension of technology in its publications and maintains a Gender and Technology Expert post in it's UK head office. A major women and technology programme was established in 1995; Do It Herself - An international programme on women's technological knowledge and innovation. This has been working at two levels; grassroots "with the women who use and adapt technology, in order to strengthen their skills and build on their expertise" and at "national and international levels to raise awareness about women's technological capabilities.."(Appleton, 1995). A development from this programme is a

programme extending the implementation of technology and gender policy at grassroots level. A series of training modules presented under the general heading of Discovering Technologists: Women and men's work at village level were being piloted in Sri Lanka and Kenya in 1997. A principle aim and "a major challenge of the programme was to obtain information about women's 'invisible' technological innovations"(Wijethilake, 1996).

Interviews in the UK highlighted two projects being formulated and / or implemented in Zimbabwe that had gender as an issue and design as a possible consideration. Both projects illustrate the organisation's move towards technology for production for the 'market', a shift from technology to meet 'basic needs'. The Technological Capability and Enterprise Development Project and the Light Engineering Project had both received input from the Gender and Technology Expert at the formulation stage (both) and during implementation (the latter). The Intermediate Technology Consultants were involved in a project designing a solar powered lamp and gender was raised as a potential design issue.

As has been discussed in the chapter on methods, my background as a product designer and experience of Voluntary Service Overseas (VSO) was critical for the success of the interviews and this is particularly evident in the following chapter. Ten members of the organisation were involved to a greater or lesser extent in the research: In ITDG UK the Gender and Technology Expert (female), Chief Executive Officer (male) and Technology Policy Officer, Manufacturing (male) were interviewed. For the Intermediate Technology Consultancy, the Managing Director (male) and Business Improvement Manager (male) participated. In Zimbabwe, the Project Manager (male) for the Technological Capability and Enterprise Development Project (SMIs) based in the Social Science and Policy, Small Enterprise Unit was interviewed, following up an informal meeting in the UK. The Project Manager (male) and Team Member (female) for the Light Engineering Project agreed to take part and informal contact was made with the project's workshop Supervisor and Technician (both female).

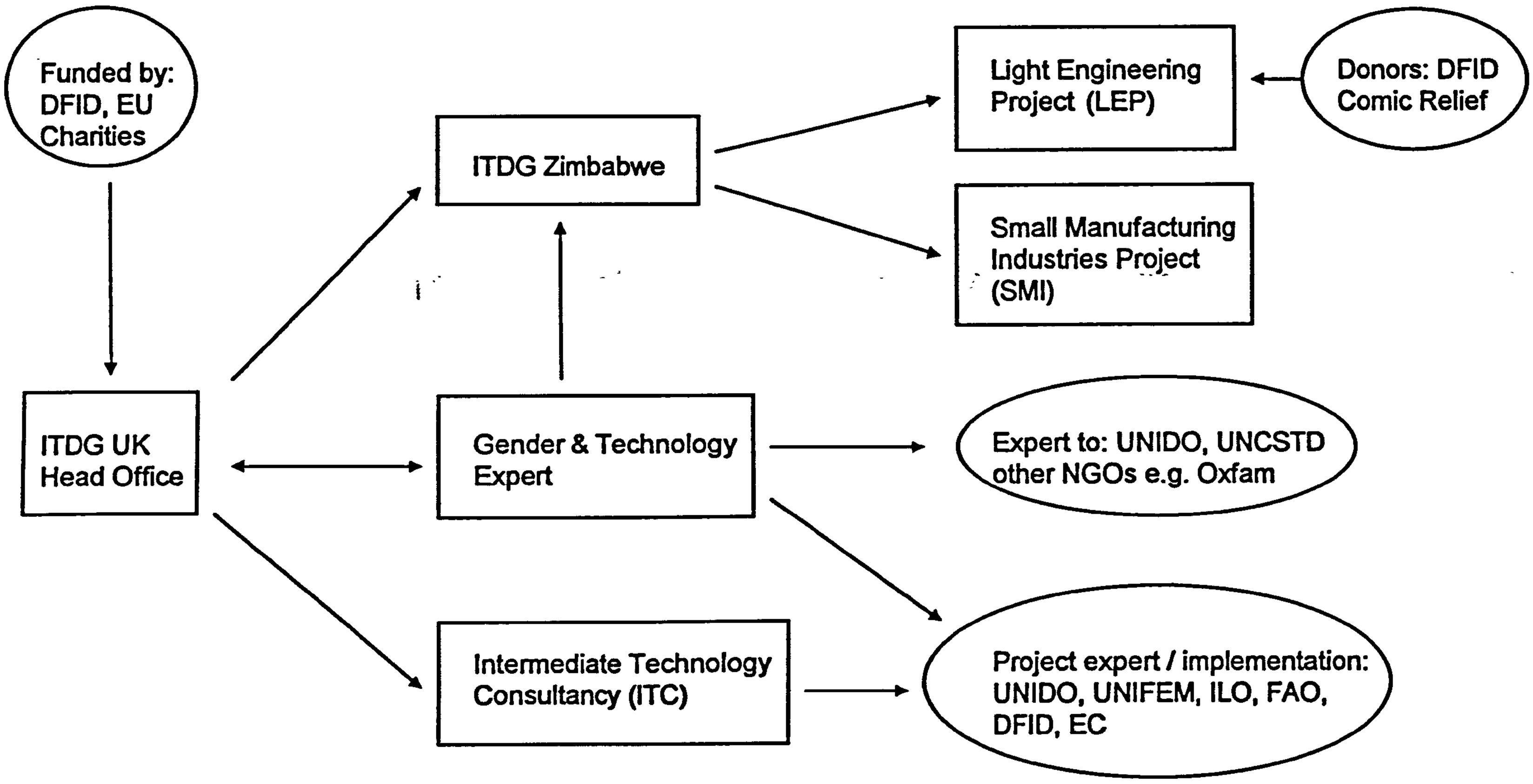

Figure 2. ITDG and the international policy process

The research took a 'slice' through the organisation, from the headquarters in the UK to operational level in Zimbabwe. The organisation's involvement in the international policy process is complex, happening at a number of levels (see figure 2). The chapter moves from the headquarters to the two 'case studies' in Zimbabwe. It then returns to the UK and presents a 'case study' project being implemented by the organisation's consultancy. Finally the international networking of the organisation is discussed.

Gender and technology - policy in the organisation

Aspects of ITDG's work involve advocacy and as 'experts' in technology for development, individuals are sought as advisers by other organisations. However, ITDG is principally involved in programme implementation and Hjern & Porter's (1993) observation that this involves many actors in complex and diverse situations is well illustrated by the organisation. Policy formulated at the top by the Chief Executive Officer and senior management has to respond to changing governmental emphasis (as the result of a general election for example), and changing development discourse. Implementation of policy has to navigate cultural differences within the organisation (personal and geographical) and 'in country' and the crucial issue of "allowing" gender in has to be seen in this complex context.

"Gender is not negotiable"

Gender as a policy issue cannot be avoided by the organisation because of pressure from donors and development ideology (see Powell & Seddon, 1997). This may have precipitated the Chief Executive Officer into making the statement that gender was not negotiable within the organisation. This was said to an international meeting of the organisation's country directors and policy workers. The response was to acknowledge that gender is important for development but a depth of resentment at having to deal with a difficult issue was revealed in the interview with the Project Manager(SMI) working in Zimbabwe. He recalls that

"...the first time I heard (the CEO) talking to us about this subject, his statement was these were different tenets he wanted to focus on and of course the issue of gender was not negotiable, that was the statement he used - not negotiable. At teatime people were saying what does not negotiable mean so I say I'll try to unpack the statement, what does not negotiable mean. Does it mean that when we do projects now we just have to do an all women project to satisfy the requirement as part of our portfolio or what? So I would take him to task about what does not negotiable mean. It was quite a heavy statement to make and we're just trying to understand exactly, its loud and clear but exactly what does that mean, when he says it's not negotiable?"(NG6/14.1). Although the Project Manager(SMIs) acknowledged the importance of gender as a development issue, implementing the policy was foreseen to be problematic; *"we're just wondering if we go back home with this statement..[..] and then as we feedback the proceedings to our staff and say our Chief Executive said gender was not negotiable... and then they start firing questions, what would be our response to them?"(NG6/14.2).* The Project Manager's response illustrates the ambiguous nature of symbolic gender policy (see Stone, 1997). The Chief Executive was intending to be unambiguous but losing sight of the ambiguity of the policy results in the Project Manager being unwilling to co-operate or compromise except under duress (discussed in more detail later).

A Gender and Technology Expert

The presence of a Gender and Technology Expert (female), in a senior management role indicates a degree of gender awareness on the part of the organisation. The expert is able to review project proposals, evaluations and reviews and demand gender issues be considered. The post takes on the responsibility of institutionalising a gender perspective in both policy and practice, which as Beall (1999:78) notes is put under considerable strain when it "suggests outcomes which are not compatible with the policy frameworks" of neo-liberal economic reform. This is evident in project implementation and is discussed in more detail later. The Gender-Technology Expert is given resources to formulate

and implement gender and women specific programmes and is used as a resource herself by the organisation's consultancy when they require a gender input. However, a co-ordinated approach to gender issues is needed within an organisation as the Gender-Technology Expert says *"in IT we've not really had a co-ordinated approach to the problem, or the issue. So we've not been able to as a group learn lessons...there's a beginning of a group commitment and it's coming from the top.. you have to take an interest in women.[..]. But actually turning those words into practice is more difficult. And again he's (the CEO) in danger of being seen in the same light as ODA (now DFID), 'Oh that's just a donor's priority not our priority in Zimbabwe, it's your priority'"(NG1/3.3&4.1).* The Expert indicates the lack of like minded individuals in the organisation who could 'steer' the gender policy process (see Wallis, 1997). The top down policy implementation is inadequate but so to is the policy network at ground level (Klijn et al, 1995).

The symbolic level of the organisation's gender policy is indicated by the Gender-Technology Expert's argument that *"it's essential to move gender away from the poverty development debate because keeping gender firmly in the poverty debate actually takes it out of the empowerment debate..[..].. what we don't tackle of course..., like most agencies, is anything to do with changing the status and changing the gender power relationship between men and women. We don't mind empowering poor men in relation to rich men or poor women in relation to rich women but we find the whole issue of intra-household relationships very difficult to handle"(NG1/2.1).* The Gender-Technology Expert thought through ways of approaching change to the issue of intra-household relationships saying; *"I'm not sure how we approach that - I think its incremental, I think we have to get there bit by bit, may be we start with project design, technology design, understanding different needs and priorities but that's being done very patchily"(NG1/2.1).* There is a gendered technological determinism that pervades the organisation, this may be deconstructed bit by bit but currently the male domination of technology can be ignored with the emphasis being placed on gender rather than women - men have to benefit too from gender projects (Moser, 1995; Wieringa, 1998). The issue of intra-household relationships touches uncomfortably on overtly feminist issues (Wieringa) and yet these changes are happening anyway so why not engage with them?

Getting round the not negotiable

The responses of the Gender-Technology Expert to questions of the limited success of gender policy implementation begin to suggest a concept of "getting round" the issues, a concept that recurs throughout the interviews as further sections discuss. "Getting round" gender policy is where policy implementers, whilst explicitly acknowledging the relevance of the issues, implicitly subvert implementation. Project managers etc. may hear the CEO's exaltation and be caused some discomfort in that the tokenism towards gender is being chipped away a little more. Attempts to get round the gender issue becomes harder to do within the organisation and the subversion of individuals is challenged.

The individual's own background, gender, education, culture, also influences the implementation of gender and technology policy and can be used to justify getting round the "not negotiable". The Project Manager(SMI) says; *"as development workers we may be professionals but at the same time we also have our own local values"(NG6/13.1)*, the implication being that the masculine and feminine are held by many as traditional concepts (see Enloe, 1989), that cannot be interfered with. Workshops and seminars on gender within the organisation have not resulted in an openness to change, rather gender has become a hoop through which to jump. This seems to have been further emphasised rather than lessened by the CEO's declaration that gender is "not negotiable". The Project Manager's response to the top-down policy may also reflect feelings of an unequal partnership between the policy makers in the North and implementers in the South (Powell & Seddon, 1997), even within the same organisation.

As Fischer & Forester (1993) have noted, policy making includes some and excludes others. The exclusion of the organisation's country directors in the formulation of the gender policy leads the Project Manager(SMIs) to suggest that they could go as far as to present gender; *"with the contempt they think it deserves. So that you are presenting something to people but basically you are saying no I just wont be doing that but anyway this is what I'll say.."(NG6/14.2).* Respect, a reasonable belief in and valuing what is being done in terms of gender are seen as essential but in order for this to happen country directors should not, the Project Manager(SMIs) says; "*express their individual opinion because that could cause*

problems"(NG6/14.2). These are powerful statements, using the word contempt to describe individuals' feelings for gender. The imposition of gender policy from the top results in individuals feeling unable to express their views but prepared to undermine the policy through implementation or non implementation.

Gender may still be dismissed as the *"hobby horse"(NG6/14.1)* of a particular individual but this stance is less and less tenable within the organisation. As the Project Manager(SMIs) says *"..I'm trying to think of the business plan for ITZimbabwe against which we are going to be reporting to* (the CEO), *whether there are elements of gender in there or not. I'm sure there aren't, pretty certain there are not! You don't want to leave it until its too late to try and find out about these things* (gender)*...[...]..But the point I'm trying to make is that if there's a policy statement that says this, maybe we need to have checks and balances along the way.."(NG6/16.1).* For an organisation focused on technology this is a positive move towards ensuring that women's technology needs are at least placed on the agenda. However, it is clear that individual commitment is essential for policy implementation, there are checks and balances but these can be superficially responded to.

An illustration of inaction or 'getting round' the not negotiable gender policy is the response of the Project Manager(SMIs) to the discussion he had with the Gender-Technology Expert about the gender issues raised in his project proposal. Very little reference is made to these in the project document which simply states that; "The project expects to identify differences in the needs, constraints and opportunities experienced by men and women industrialists. Sensitivity to these issues will therefore form part of the general approach" (Sunga, 1997). The Gender-Technology Expert was *"...a bit disappointed. I mean basically he's got like one or two catchall sentences, I've talked to him about it and he recognises the importance of it but he hasn't so far as I can work out..."(NG1/a1.1a).* During my interview with the Project Manager(SMIs) it became clear that he has no intention of considering the technology needs of women or the gender issues inherent in the area of manufacturing, although he is aware of the gender policy of the organisation. The Project Manager(SMI) cleverly acknowledged that gender is an issue whilst arguing for its legitimate sidelining for the greater good of development,

this not being the right time to pursue it; "*there's a feeling in many quarters that may be it is an issue, that this gender issue is an issue but that maybe this is not the right time to address it. That maybe you are splintering the cause too much to the extent that you are pursuing all these different things all at the same time"(NG6/8.3).*

Putting the responsibility for implementing gender policy back on those who formulated it is arguably another tactic to 'get round' gender issues. The interviews suggest this as do the responses of local NGOs implementing ITDG projects who argue that they do not understand women and technology issues and consequently there are limitations on the projects which they are implementing. The Gender-Technology Expert has noted that; *"what local NGOs have said to us is 'look we're stuck, we've given extension courses, we're told to go and teach women how to grow tomatoes or cauliflower, look after one day old chicks until they're big enough to eat or lay eggs... so we have projects which we have to implement, we have donors who say this is what we want you to do and we go and do it'. And actually what they <u>were</u> saying is ' we want to be better trained in understanding women / technology issues so that we can adapt those programmes around the skills that women already have for example, and to enable them to bring in to the course the knowledge and skills they already have"(NG1/5.3).* Paternalism in regard to the local staff implementing projects is also evident. The Gender-Technology Expert is looking at *"how you stimulate people"(NG1/5.3),* (within the organisation), to become proactive in this area, she may be stymied by Gordenker and Weiss's (1995) observation that NGOs have a tendency to act rather than contemplate.

The organisation has a number of publications on gender and technology and a gender-technology expert on hand, however the responsibility for implementing gender and technology policy is placed firmly on the policy formulators by ITDG's ITC Managing Director. When asked if he was in contact with any of the networks concerned with women and technology he replied; *"No I must say I don't and I probably should do, maybe I'm not as interested as I should be (laughs) but I haven't seen much of that stuff. I've seen newsletters and things but a lot of the stuff I've seen has been fairly basic things saying its important to take account of women's concerns in the design of technology but haven't been many 'how to do it'*

articles"(NG4/19.3). When asked how well he thought the organisation deals with gender and technology issues the Managing Director offered a way of 'getting round' the not negotiable which perhaps indicates the reality of the situation within the organisation and the "pseudo inclusion" of gender (March, 1992). He says; *"I think its easy to have these policies as you say top down..[..].. think everybody sort of appreciates the need to do it but what a lot of people don't know is how to actually go about it, what actually to do in order to make sure that women's interests or particular concerns or constraints have been taken into account. And I think we tend to be sort of repeating the rhetoric that yes, gender issues are important and so on and they can get sidelined if you're not careful. Say 'oh yes we've got to have a bit about gender in this project' as opposed to sort of internalising it and saying 'right, what are the gender issues, how are the women and men affected differently by this'..[..].. I think it would be useful to do a lot more on that sort of, how do you actually go about finding out"(NG4/19.2)*.

Annual Reviews

All ITDG projects are required to present an annual review with gender as a formalised issue. The Gender-Technology Expert continues to be exasperated by the response within her organisation to gender issues as illustrated in the annual reviews; *"Having read them all, I'm getting fed up with people saying 'we haven't got any data on gender because this was not planned', well none of them this year dare say this is a gender neutral project!"(NG1a/25.1)*. A colleague comments that this at least is *"...an improvement, you should count that as your achievement for eight years in ITDG, we don't have any gender neutral projects!"(with NG1a/25.1)*. Individual action and concerted effort have been effective change agents (Apter & Garnsey, 1994) but the exasperation felt by the Expert is tangible. Hogwood & Gunn's (1993) criticism of policy implementers that they expect too much too soon can be used as a defence by those getting round gender issues.

Project implementers had been asked to describe the impact of the projects on women yet the majority of the 150 reviews read by the Gender-Technology Expert

said they had not collected any information. Where reference was made the Gender-Technology Expert was disappointed that this was limited to them saying *"there's two women on this committee full stop - and that's the impact, the participation of women on a committee, it's not enough. And also it's just women, not talking about women and men. It is very frustrating and I've come to the conclusion over the last year or two that we are talking about something that is so much part of somebody's identity, each and everyone of us that it is very, very difficult to tackle"(NG1/a11.1).* That gender has come to mean women in development discourse is critiqued by a number of writers (for example see Scott, 1989; White, 1994; Moser, 1995; Wieringa, 1998). Gender challenges the construction of masculinity which, as Apter & Garnsey (1994) observe, has to be redefined as femininity changes. The challenge of women's equality and empowerment is being played out against the backdrop of technological determinism. In both its physical and knowledge based form, technology is the extension of patriarchal power. The Gender-Technology Expert is observing the implicit as well as explicit resistance to the 'not negotiable' change; *"The whole issue of being able to deal with gender in our work is so... close to our own perception of our own identity of ourselves as male or female that we're actually asking a huge amount of men particularly who find it very threatening, not all men, but some definitely do and we're not dealing with that as an organisation. We're not actually giving men the tools to help themselves through it..[..].. people can't deal with the professional if they're not prepared to deal with it personally"(NG1/a11.2).*

The organisation is giving increasing prominence to manufacturing and within this remit the Gender-Technology Expert says that *"one of the things I push very hard in internal communications is that you have to be clear that a lot of the decisions that are taken are not wilfully anti-women. People are not wilfully saying 'okay I'm going to discriminate against that group'"(NG1/16.3)*, or as the CEO suggests *"design them out"*. According to the Gender-Technology Expert, it is a decision made with a lack of knowledge, *"the lack of understanding that this decision is actually going to affect the design of the thing all the way down the line including who uses it"(NG1/16.4)*. I would argue that it may not be wilfully anti-women but women are rendered invisible by the process (see Spike Peterson, 1997). By

suggesting that it is not wilful discrimination but a lack of understanding, the Gender-Technology Expert is letting colleagues off the gender issues hook.

"having the boys by the balls"

In the international policy framework, the Gender-Technology Expert notes; *"there's a big donor push - people cannot ignore it [gender policy] even if they want to - they have to do something about it but there is a resentment in some parts that its still something that is only donor led, that it really doesn't reflect the situation in our country, its just that the ODA [now DFID], the Dutch or whoever want this kind of gender analysis"(NG1/2.2).* This reflects the response to having to 'fill in' the gender section for project proposals and it is interesting that the Gender-Technology Expert recognises this amongst her colleagues. There is strong evidence of male confusion and hints at contempt for gender but a reluctant awareness that gender issues are important to development. Pressure to take gender into account also comes from the policy of funding organisations, for example government departments, as the Project Manager(SMI) notes; *"you have to comply to their guidelines as soon as you present a proposal. In many cases it has statements and a section on gender and environment so you have to do that...[..].. What you should avoid, which is difficult to avoid, is paying lip service to those things. It undermines the area..."(NG6/16.2).* Implementing policy, beyond paying 'lip service' can be problematic for development organisations, as Charlton & May (1995) observe, organisations' structures are built round project not policy implementation.

Donor organisations can influence projects during implementation as well as at the proposal stage making it harder to avoid addressing gender issues. For example the Light Engineering Project is funded by Comic Relief and according to the Gender-technology Expert, Comic relief, as a donor organisation, is gender sensitive. The Expert notes that Comic Relief asked for feedback on how the project was *"managing to meet the needs of women as well as men manufacturers and of course the answer is they weren't"(NG1/a5.2).* The Gender-Technology Expert described this request for information as *"very much having the boys by the balls"(NG1/a5.2).* This turn of phrase is interesting in relation to the response of the

Project Manager(SMEs) as having *"to perform"(NG7)* for project implementation. His perception is that the project is being emasculated by the donor organisation and the sexuality of the project manager being challenged by the NGO. However, the donor organisation is attempting to enhance performance through gender sensitivity (donor-led demands, see Wallace, 1997). The words used by the Gender-Technology Expert start to indicate the necessity of having to use 'male' tactics to get gender policy implemented.

The Gender-Technology Expert suggests that the resentment expressed, implicitly and explicitly, to gender issues and the gender policy of organisations creates; *"a real double bind with technology..[..].. The issue of the way most engineers are trained to think about the needs of the end users of their products be they men or women, it's actually very difficult for them to start to think about the end user and then to think about men and women as end users"(NG1/2.3)*. This observation is reflected in the interviews with ITDG's ITC Managing Director, Business-Improvement Manager and Project Manager(LEP). The Gender-Technology Expert highlights the difficulty of implementing gender and technology policy and establishing good practice; *"I think one of the difficulties we had internally, not so much in the UK now, we had quite a lot of engineers who had worked..[..].. with women's projects for twenty years who therefore didn't need to know about women's projects or women and technology. And that was our most difficult audience I think in many ways. And still is our most difficult audience because they find it very difficult to accept that they may not be behaving in a gender sensitive way even though they are working with women and have always worked with women"(NG1/3.2)*. Men are still resistant and technology remains neutral. The perception of ITDG's ITC Managing Director, who has worked in the organisation for seventeen years, is that the issue of women's technology needs has been considered right from the beginning. He says; *"On the whole I spoke of women being part of the process of developing technology, something we've talked about a lot within the organisation its always been an issue.."(NG4/19.1)*. This commentary is illustrated in much of the literature on technology and technology policy where the discourse is elitist and androcentric. With regard to individuals there is some evidence of change, a realisation that this position has to shift, not only because of

the 'rights' issue but also because development and technology projects stand a greater chance of success.

The Gender-Technology expert argues that projects need to facilitate women's groups in order to; *"work at building their awareness of their own capacity because most women have a low awareness of their own technological capacity. They don't see cooking as a technology. Anything that is produced for domestic use is not technical, that sort of thing..."(NG1/6.1).* It is not only the women in the groups who do not see domestic tasks as involving technology. The response from the Light Engineering Project team in Zimbabwe to the report on women's activities which included cooking and hairdressing, indicated that they too were unwilling, if not unable, to see the technology needs of women. This is despite the fact that the activities were no longer in the private, domestic domain but income generating activities operating in the market place.

Women and gender specific projects

The Gender-Technology Expert has established 'Do-It-Herself' - An international programme on women's technological knowledge and innovation (started in 1995). The premise for the programme is that women and men learn to play gender defined roles that in turn define the technologies they use; "Technology is never 'neutral' - it always incorporated its designer's views about problems to be tackled and what the user wants" (Appleton, 1995). A key result of the programme has been a perceptible growth in women's self esteem and feelings of empowerment. Speaking about a workshop run in Peru, the Gender-Technology Expert says *"...what was absolutely fascinating was the growth in <u>their</u> self esteem..[..].. they would suddenly say 'but we're technologists!'..[..].. it was just fantastic"(NG1/6.2).* As Lall (1994) points out, any technology 'transfer' requires learning because technologies are tacit.

A development from the Do-It-Herself Programme is a project being piloted in Sri Lanka - Discovering Technologists: Women's and men's work at village level

(1996/7). The project document states that "Women in their daily activities use technical skill and knowledge. They continually innovate and adapt technologies in response to the difficulties that confront their lives. However, these technological contributions are invisible...[..].. This invisibility means that extension of new technologies ..[..].. often by-pass women" (Wijethilake, 1996:2). The project has produced a series of training modules to introduce women and men to technology and design and how and where these impact on their lives.

As an individual the Gender-Technology Expert has pushed for an implementation strategy. She *"argued long and hard that there should be some kind of synthesising component so that's what we have now, we have an international gender project which is basically set up to extend our knowledge about different technology and that has four components"(NG1/a5.1).* The four components are: formulating a gender sensitive framework for measuring technological capability; researching the impact of training on women; 'doing it' trying to show that it can actually be done; developing a technology training manual. The components have not been universally welcomed and there is resistance from ITZimbabwe (this is certainly identifiable from the interviews with ITZimbabwe staff). The Gender-Technology Expert is attempting to find ways of getting women's technology needs put on the agenda. An approach is being taken which argues that an awareness of gender issues will benefit the project's clients, artisans in this case, a bottom-up approach; *"we're saying from the artisans' perspective what are the issues as a whole, if the hypothesis that gender issues or that women are less visible because they are lower status... then it's also the case that their technical needs are less visible. If their technical needs are less visible it means that there's a market out there somewhere, it just hasn't been properly tapped or the needs are not being met.."(NG1/a5.1).* The organisation is marketing gender issues within itself in an attempt to implement it's gender policy. Women have had to become an exploitable resource for predominantly male artisans in order to make gender issues acceptable. The Gender-Technology Expert hopes that this will lead to good practice despite evidence to the contrary in the annual reviews *"following project design, building capacity hopefully and all that stuff and that's why I'm reading all the annual reviews which is a bit of a labour of desperation"(NG1/a5.2).*

Gender projects, Calhoun (1996) suggests, invariably run parallel rather than being convergent with the mainstream work of organisations. In ITDG running concurrently with the women and gender specific programmes, the Technology-Policy Officer for Manufacturing was working on a programme proposal for small and medium scale manufacturing enterprises. When asked about the consideration given to gender issues in the proposal he had to be prompted twice to respond directly to the question; *"Let me read you the bit on gender if I can find it because we sort of always put something in on gender..[..].. It says that the biggest gender issue related to the degree to which artisans' products meet the needs of women and men and the opportunities to both improve products and make new products, to make contact with all potential customers. I always say this about gender, its not women, its women and men and others if you like. I always use the word 'all', but the argument is you emphasise women because it has been under emphasised in the past, there is a danger of doing that"(NG3/5.1)*. So although the 'bit on gender' does talk about ensuring that there are opportunities for women to train and be recruited on to engineering courses and that this must be made explicit by the project team, the emphasis is on women in the passive role of consumer.

Addressing power structures is being 'got round' effectively, disguised as gender awareness. The project proposed by the Technology-Policy Officer will run training courses to increase the technical skills of small-scale metal workers and the documentation also states that *"it is imperative that these skills are at some stage translated into income and growth through seeking out new, expanded products or markets... that could well include markets for women or children"(NG3/3.2)*. The concern here is that women will be treated as a passive market to be exploited, further entrenching the process of domination (Mohanty, 1997). The exploitation may not be overt but without gender issues being raised at the outset of the project it is likely to go the way of so many other projects that start from an androcentric base. Paradoxically, rather than this being a strategy to get women's technology needs onto the agenda, it may further the technological power base of men. Cooley (1986) identifies two major components of technology progress, profit and the consolidation of power, both of these are being offered to men but potentially at the expense of women. Here gender policy and technology policy encounter Stone's

(1997:1) “policy paradox”, “two contradictory interpretations cannot both be true”. It appears that introducing one policy into the other results in paradox.

Case 1: Light Engineering Project (LEP) - Zimbabwe

The Light Engineering Project, co-funded by the Department for International Development (DFID) and the charity Comic Relief, which was being implemented in Zimbabwe provided a 'case study' within the broader organisational context. The implementation of gender policy in relation to technology could be followed in a project already well established, having gone through proposal and mid-term evaluation stages. The project was developed in response to the recent economic climate in Zimbabwe which resulted in many redundancies from manufacturing industries. The project has provided an essential service to men laid off who are given the opportunity to establish themselves in the informal sector. The project has established two service centres which operate workshops, hiring time on large production machinery (lathes, circular saws etc.), work space and hand tools. The service centres initially concentrated on metal and wood work facilities but have ventured into textile manufacturing equipment (why this has happened is discussed in detail below). The project also intends to help artisans develop new products, focusing on, but not exclusively production technology. The project has been very successful in providing predominantly men with the opportunities to establish themselves in the informal sector and progress to the formal.

Trickle down gender policy

The organisation does give talks on gender, the Gender-Technology Expert has given a presentation at the Zimbabwe office and a considerable number of papers are sent to the office. The Project Manager(LEP) does not think however, that the organisation's policy on gender has any real influence. He says; *"Somebody in the UK once said gender is not negotiable and nobody really understood what it meant..[..].. I just look at our main objective which is to create employment. And then when it says it gender I look at how many jobs have been created for men and women and its way out of balance so that's my very simplistic way of looking at it - you're asking me how does the policy at UK level trickle down or come down to us? I don't think it really does, its not been all that effective on this project, maybe in*

others it has"(NG7/10.2). Throughout the interview he was clearly irritated at being asked yet more questions about gender. He demonstrated ways of 'blocking' the policy through the use of numbers in requests for gender evaluation. This might be largely defensive and protectionist bluster in the face of consistent pressure to take women's technology needs into consideration in every project. The Project Manager(LEP) works on a two or three year contractual basis and this influences his attitude to gender issues. Being asked to consider gender at every turn in his project implementation results in his response; *"why should I really bother. I've got this hard little package to do and I've got to perform because on that depends my next.... Don't bother me with all these other things, you know"(NG7/12.1&2).* The Project Manager's(LEP) choice of words here "hard little package" having "to perform" have strong sexual overtones, masculine performance and male pride are inextricably linked with a successful project. Arguably, the feminising of this through pressure to consider gender is debilitating and emasculating. Aspects of masculinity are being challenged and men are being 'bothered' by gender, an irritant that refuses to go away (see Ramazangolu, 1992; Gill & Grint, 1995; Enloe, 1993).

Institutionalised gender bias which excludes women from new opportunities (Ahmed, 1994) is indicated by the Project Manager(LEP), who at several points during the interview was at pains to remind me how the project had originated: *"The opportunities I suppose are unequal, there's inequality definitely, you've got to remember that the light engineering project is a light engineering project right? It was born out of work in blacksmithing and woodworking so it comes from a direction that's very male orientated and its not really a project about small businesses"(NG7/2.2).*

The feeling that policy is being imposed from the top down without any understanding of the local situation is also indicated by the strength of personal anger expressed by the female Team-Member. When asked if she thought it mattered that so few women use the service centre, the Team-Member replied; *"I don't think it matters, what matters to me is, is she doing something legitimate to get money, to feed her family. If she's sewing what's wrong with sewing? Does she have to do metalwork? Does she have to be machining on the lathe. What does*

that give her at the end of the day. What she wants is money. So if she can do hairdressing and she gets money, fine for her. I actually didn't make it an issue and I to a certain extent felt really, really angry. Thinking to myself why are you enforcing us, that this project is not gender sensitive. We cannot make these women gender sensitive. Why should we really have a deliberate effort to make these women what they are not?"(NG8/13.2). The Team-Member has fed back these feelings indirectly to the UK office during a visit from a senior advisor; *"we tried to feed back that we didn't feel that is was in our mandate to really make women come and use the services of the light engineering project if they didn't see any benefit coming out of their way to it. And we felt we didn't and I remember* (the Project Manager(LEP)) *was saying we cannot spend time going out to look for women because this thing has been advertised everywhere, so a woman entrepreneur who is in this area of work should of their own accord come to use the workshop"(NG8/13.3).*

Gender was treated as a numbers game as the Team-Member notes; *"So there's aspects of gender maybe when it first came, it was just like a numbers game, how many women, how many men...[..].. if there are two women and twenty men then you are not doing good enough!(laughs)"(NG8/15).* She clearly acknowledges that attempts are made to get round gender issues using tradition and culture as the rationale for the lack of women participants; *"...what we used to do in our project or documents (laughs) was on the gender section to just say this project is male dominated by the cultural nature of the people, that blacksmithing is for men, women are not interested..[..].. so the gender paragraph was like this little bit, as long as you mentioned something you at least have it at the back of your mind"(NG8/15).* However she does acknowledge that the organisation's gender policy is filtering down and making a positive change at both a project and individual level; *"I remember I used to just say about these gender things but now my sense is slightly changed. I'm now beginning to seek to find out what's happening to the women out of interest, not so much of a requirement of a project document. So I think its slowly changing. I remember with the Project Manager we used to really sit down and really agree that we were really being bothered by these women and men issues (laughs) but I'm seeing that his stance also is slightly changed.."(NG8/15).* Good and determined practice from the UK office,

predominantly the work of one individual, is resulting in incremental change. However, women are blamed for their lack of involvement in the Light Engineering project. Discussing opportunities with the Team-Member, she says; *"I think it is not so much to do with the design of the project but to do with the people themselves. Because these lady supervisors they are very young and its the kind of group that are beginning to enter into this field. So maybe it would be expecting too much to have those kind of numbers that we are hoping for"(NG8/10.1)*. The responsibility of women in general to access technology is made very clear but it is difficult to see how the project team are able to persist in this assertion. It is another way of getting round the gender issue. The female Workshop Supervisor mentioned by the Team-Member made the observation that women who have been trained in engineering, as turners and fitters, get employment straight from college, usually through the placement done during training. She felt that companies find women work harder, are generally better than their male colleagues and are more reliable. Women are less likely to be made redundant and consequently will not need ITDG's service centre. This suggests that women's capabilities are keeping them away from the service centre rather than their incapacity with technology.

Additionally, the organisation does have examples of projects which have successfully raised women's awareness of themselves as technologists (e.g. in South America), however the project team do not seem to have made themselves aware of what has gone on else where and there is the impression of continually reinventing the wheel. This is of course, another successful way of not changing, or attempting to ignore change, in gender and technology issues. Questions are raised of how the organisation's gender policy can be implemented when resistance to the issues are apparently so strong. The Team-Member says; *"we're still trying to find out exactly why they're not coming, as many as we would want to come, during the discussion of that paper, it had been suggested that maybe women should be given some kind of preference treatment but we still felt that if it is gender issues, we should not necessarily prefer one gender to the other, we should give them equal opportunity which we think we are doing..[...]... we have no discrimination"(NG8/6.3)*.

Survey of women in manufacturing

The charitable donor has influenced the project implementation regarding gender issues by suggesting that the project has not addressed these effectively. The Gender-Technology Expert and charity donor organisation insisted that the project address the gender issues that were resulting in the lack of women's involvement. A report was commissioned to look at women and small enterprises and the potential for involvement in the project. The report was produced by two Zimbabwean women consultants. The female Team-Member notes that the survey was commissioned because the project was *"getting a lot of criticism.... that it was like male dominated and we wanted to find an entry point"(NG8/3.2).* The criticism from the donor and ITDG's UK office stated that the project team was *"not really working on the gender issues in the manner that we should. And we thought that by providing the service if there were any entrepreneurs who want those services they should come. We were not discriminating but that sounded not good enough"(NG8/3.3).* This is a classic way of trying to 'get round' the gender issue, laying claim to gender neutrality. The project team responded to the criticism by recognising that they needed to know what women were doing and what equipment the women entrepreneurs needed in order to be successful. Interestingly and perhaps significantly they felt ill equipped to research this themselves despite obvious their obvious skills in seeking information from a target group. The survey highlighted textiles as an active area for women, sewing machines and an industrial iron has been bought to hire out (very successfully). The women, as the Team-Member says; *"made a request and an industrial iron was bought and they're now hiring it. So its a response to the request of the people"(NG8/4.2).* There is obvious potential here for good practice in meeting the technology needs of women but it is being used as a way to get round gender issues in the project.

The Project Manager(LEP) considered the report to be a *"good tour of women in business"* but *"a little unbusinesslike and uncommercial and unviable their suggestions to get involved. But it gave us some good ideas and was a good first step"(NG7/1).* The response to the report illustrates ways of getting round gender issues and considering ways to encourage women's participation in the Light Engineering project. The Project Manager(LEP) argues that the problems the

woman consultant *"came up with are exactly the same problems facing men...[..].. Now if she'd been specific about the problems that were faced by women then it would have been easier for us to focus on them"(NG7/1).* A defensive stance was taken throughout his response to the consultants' report; *"another thing worth to bear in mind is that women in small businesses have been extremely successful in Zimbabwe, a lot of the small businesses are run by women and operated by women and some of them are very, very effective, very viable and they make a lot of money, both in food processing and, well the two that come to mind immediately are textiles especially good in that.."(NG7/1).* So women entrepreneurs are doing okay and the implication is that too much emphasis is being placed on gender issues. However no consideration is given to the concept that a gender analysis of the status quo could help promote a dynamic process between the informal and formal sectors, an integral part of industrialisation (Pearson, 1992).

Another illustration of getting round addressing the gender issue in technology is the equation of women's technologies with the traditional domestic environment and their not being given the same importance as traditionally male technologies such has electric hand drills etc. Paradoxically the project defends technological determinism with the use of social structures, the private / public split, to justify the status quo. The same criteria are not being applied to 'feminine' technologies which are seen as too problematic to introduce into the 'male' environment of the metal and woodwork shop. One area highlighted by the report, textiles, was suggests the Team-Member; *"easy to tackle"* but other areas have apparently insurmountable problems; *"There are other areas that the survey recommended which we have not yet tackled, like catering services. We were battling with if we buy stoves how do we hire them out? Maybe somebody is going to need them for two or three months..[..].. We were not too sure how it was going to work out..[..].. So we decided not to venture into it immediately until we've seen how this one is going to work out"(NG8/4.2/5.1).* The report suggests that "Women are the majority in the informal sector because women tend to have low levels of education thus finding it more difficult to secure employment in the formal sector. Moreover, traditionally women tend to be home makers rather than formal workers" also the report says, women "tend not to work full-time at their business activities because of other various social obligations"(Chidavaenzi & Manyowa-Meki, 1997). The fact that the

majority of small enterprises are owned and operated by women is acknowledged by Mead & Liedholm (1998) who also say that because these are mostly home based, the women become "invisible entrepreneurs". Mead & Liedholm go on to show that female-headed small enterprises also make up the majority of failures (for personal rather than business reasons). As the Light Engineering project illustrates, women tend to be overlooked in programmes that aim to support small enterprises.

In response to the survey, the Gender-Technology Expert took a carrot and stick approach to getting policy implemented; *"what I'm saying to them to them is that if you want to get involved further, there is a possibility for funding that we can raise through gender and technology"(NG1/a6)*. This might be potential good practice but the Gender-technology Expert is having to consider male sensibilities and disguise the inclusion of women. At the end of the day the survey is dismissed and criticised by the Project Manager(LEP). He can get round the gender issue using legitimate arguments, he has sought advice from within the organisation but project length is against the successful implementation of recommendations (see Hogwood & Gunn, 1993 - too much expected too soon). He says; *"we got some assistance from the UK when we threw up our hands and said we don't know what to do, come and help us. We got some help, a few ideas and that's what brought about this study by the two women. But it hasn't really given us any ideas that we can implement within the year and a half left or within the three years, that's always a problem"(NG7/10.2)*.

The project team regained control, as the Team-member says, by refusing *"the recommendations about preferential treatment for women on the light engineering project but then as a compromise we had to do that survey because we still need money from the donor! So no matter how much we want to be adamant we still have to... But I'm happy it didn't have to be the women having to come to do the metalwork "(NG8/14.1)*. The demand for gender awareness and the inclusion of gender issues in the project from donor and UK office resulted in a defensive response from the project team. Defence mechanisms resulted in poor communication as the Team-Member acknowledges; *"maybe we didn't communicate very well, because we were saying something else and maybe they*

were just saying we should do what we have ended up doing, in incorporating women in some way. But we kept on feeling that maybe they want us to have the women in this to do the machine work. I think this is what I'm beginning to feel, that maybe we were not communicating properly. So we ended up doing that exercise and I'm quite happy that is working out well so far"(NG8/14.2). Although the female Team-Member expresses satisfaction with the outcome of the exercise I would argue that the evidence points not to a process of good practice but to a process where women's needs and voices have been largely side stepped.

Hearing women

Prior to the formal interview with the Project Manager, we visited the Light Engineering project's service centre and discussed the difficulty the project was having attracting women into the facility. I had proffered a suggestion that it could be useful for the project to go into schools, to make presentations of its work and encourage girls and young women to think of engineering as a possible career. It later became clear from other interviews that this had been suggested by the two women working as supervisor and technician at one service centre although the Project Manager did not tell me this at the time. The Project Manager's(LEP) response during the formal interview was to say; *"Like I said yesterday in our little talk, its a pity that we've gone for metalwork for the boys and sewing for the girls sort of thing but we are so short for ideas in how to make the first step and move into it without using your solution which is very long term in its attitude changing"(NG7/1).* The Project Manager(LEP) was feeling challenged by yet again having to talk to a woman about gender in relation to his project. Again long term proposals are limited by the project's funding and time-scale; *"We've got three years of money and our main aim is to generate employment and if we're going to have any impact in that three years, we can't really get involved in going to schools.."(NG7/2.1).*

The Light Engineering project demonstrates androcentrism and reveals "the gender privileges accruing to men from allegedly gender-neutral programs" (Hawkesworth,

1994:105). There is an obvious reluctance by the project team to talk directly to women. The Team-Member has said; *"maybe women could be involved in improving the design, other products were the grinding mills and dehullers and we were saying that customers should provide more feedback on the products that have been produced to find out what else can be done. But an activity to do specifically with women, I think would be a separate kind of activity that would need to hire somebody else to find out what the women think about the products that we've produced, this is quite an interesting area but we have not done it"(NG8/8.1).* This ensures women's technology needs remain invisible despite recognition of the issues and the push from the organisation (Everts, 1998). As the Team-Member says, *"what we thought was maybe women would not necessarily be the producers of those goods (capital goods) but they can be the users of those goods and maybe the design of some of the products that the male artisans are producing should be done with women in mind. That was I think the issue that we were discussing. That we would not necessarily have to have the women come to use the service centre so that we tell ourselves that we are really being gender sensitive, we can do it in a different way. We can produce our products and involve women in finding out what they would want the product to look like"(NG8/7.2).* The project is getting round the issue of women as producers by focusing on women as consumers, consumers of products made by men. The project reflects critical contemporary development theory e.g. Scott's (1995) demonstration of the binary logic of modern Western male norm and the traditional Third World female. Arguably this is being supported by the Gender-Technology Expert in her proposal for a project that responds to women's needs as consumers on the premise that "women can form a different market with different product needs" and small-scale artisans should be made aware of this (Appleton, 1997).

There is a discrepancy between what the Light Engineering team say about involving women and what gets done in practice. The female Team-Member engaged with the issue of involving women as users of production technology as she talked to me saying; *"So maybe a lady could be asked questions about the current design..[..]..so working at it from that aspect we would involve quite a lot of women in the product design.* When asked if the project has done this she replies "*No, we haven't. What we've done we've spoken to the producers, again the male*

artisans.."(NG8/7.3). Again it is obviously easier to talk to the producers than seek out the users. The opportunity to get women's opinions, ideas etc. is also missed through failing to ask for gender disaggregated information from the artisans producing the capital goods. This is justified by the Team-Member; *"we were not too sure whether we should really go out of our way to find out what the women think about these designs as an activity ourselves within the premises of the project we are working with at the moment but it was an interesting aspect of the work"(NG8/8.2).* Talking to women is in fact too problematic for men and there is an unspoken recognition that they might be told something that will require them to rethink their assumptions about women and technology.

The situation at the Light Engineering project's second service centre based at Gweru is, according to the female Team-Member, *"even worse!..[..].. The people who are working in Gweru are mostly men. We tried the same trick to have a lady supervisor but the women who are coming to see her were actually asking about textile machinery. They are actually coming and saying what are you doing for us women"(NG8/12.2).* Here women are voicing their needs and attending the service centre but because they are asking for equipment for hairdressing, catering and sewing, the project is finding ways of ignoring their requests. The Team-Member says; *"we found it very difficult to hire out hairdryers, how do you do it? Do we open up a big shop like a hairdresser and then say come and hire the space and the equipment for a day and then you pay us so much regardless of how many customers you got? We couldn't find a way of handling that"(NG8/13.1).* The project has not actually tried hiring out hairdryers but it is difficult to see why it should be any more problematic than hiring out an electric drill. Exaggeration is employed as a useful way of getting round meeting women's needs - the leap from a hairdryer to a big shop like a hairdresser.

Another opportunity for listening to women was provided by the interviews carried out for the women in manufacturing report. The women interviewed did have ideas on what would be useful equipment for their enterprises but these are not being followed up by the project. The Team-Member says; *"we thought about these gadgets where you keep food warm but we're not sure... because these were the requests that we listed from that survey, that this is what the women are asking*

about"(NG8/5.1). This reluctance to respond to women's requests and interests is highlighted by the project investing in a piece of equipment that was not only not requested by the women but for an activity not even mentioned in the report as noted by the Team-Member; *"we also got small printing equipment where you can print T-shirts or print small pieces of material, printing either animals or flowers... but nobody has yet hired it and we advertised it, we were saying one could get some on the job training how you can do the painting. But of late I'm not too sure, last time nobody had come.."(NG8/5.1)*. Double standards are at work here, on the job training is being offered for printing but although offering training workshops for women in metal and wood work has been discussed by the project team the rationale for not doing it is "financial" - the women would be "taking time from men who are paying an hourly rate" and the project "has to be self financing in the mid to long term".

The presentation of technology is being thought about in a physical sense by the Light Engineering project. In an attempt to address the lack of women accessing the workshops (prior to the report), the project employed two women for the Harare workshop. The Team-Member notes that *"by employing this lady supervisor and the other lady who is doing the* (product) *development with* (the project manager), *it was hoped that it would create that sensitivity to other women who would, when they come into the workshop, see that it is full of men but there's still this woman supervisor, talk to her freely and then they would be more open to come but it has not happened that way"(NG8/6.1)*. It was hoped that the presence of women would encourage other women to access the workshop facilities. Although this had not happened at the time of the research, the women's presence may have been influencing attitudes as the Project Manager(LEP) says; *"people often stand there and watch them and they're so surprised because they think 'well what is this silly woman here telling me hang on a minute I'll just service the generator'. And they are quite surprised and they often comment on it...[..].. And it really does change their mind a little bit but whether its going to make much difference. I suppose it might make them think a little bit different. It's a slow process"(NG7/5.3)*. There is a recognition that change is a slow process and arguably the project team are not going to hasten it along. Men might change their attitudes towards women and technology but essentially women have to become male - one of the boys - to be

an acceptable presence in a masculine environment. The service centre is based in the industrial site on the outskirts of Harare and the location can feel threatening and as the Project Manager(LEP) acknowledges this inhibits potential customers, both men and women. Women are frightened to come in because of the way the outside looks and they think *"will I get out alive"(NG7a).* The Project Manager(LEP) was amused by this observation in a macho way, the unacknowledged privilege of being male (Gorelick, 1991), allowing him to defend fragile masculinities and having no intention to respond to the issue in practice.

The Project Manager(LEP) suggests that rather than the Light Engineering project *"trying to get women to change their attitudes towards mechanical engineering"(NG7/2.2),* it would be better to encourage the light engineering sector to make capital goods that can be used by both men and women. Agro-processing does manufacture a peanut-butter machine which more women than men use. The project has asked the users whether the equipment needs improving and suggestions have been made. However, even when women do express their ideas about a piece of technology, it can be claimed to be gender neutral. It is ungendered and women's voices are being absorbed into patriarchy. The Project Manager(LEP) argues; *"they're engineering suggestions that anybody would make, the machine is generally too complicated, bits and pieces wear out, its difficult to clean, that sort of thing. So just from a production point of view that's the way they're looking at it. I'm not sure exactly what you mean by women design?"(NG7/3.2).*

The female Workshop Supervisor suggests that men think that women cannot produce good things. There are very few trained women and it is difficult for them to start up in business because getting a niche in the market is hindered by men's perceptions of women's abilities. The quality of products women can make in traditionally male activities is thought to be poor*(NG9/.2).* This is supported by the project's Team-Member; *"another aspect is because of male dominance in certain fields it takes a long while to remove that attitude so there's a tendency to think that maybe a desk made by a woman carpenter is not as strong as a desk made by a male carpenter. So it will take some while because women are associated with hair dressing, sewing, needlework, crafts like pottery, things like that"(NG8/12.1).*

Discussing situations of where engineers (male) have designed machines for women producers without discussing the tasks involved, the Project Manager(LEP) says; *"...a lot of people are frightened to talk to the end user because they go in with this idea already, they're not designers, they're fixers. Its a whole different approach you know"(NG7/3.3).* This suggests a fear of talking to women, of becoming involved with women's activities and requires recognition of the fact that women use technology for production.

Good intentions to ensure women's needs are considered can be hindered by the structure itself. The female Team-Member is principally involved in collecting information as to what impact the project has on it's target group. In effect collecting this information is a strategy for establishing men's needs. Women's needs will not be recorded because there are so few women involved in the project. The Team-Member says; *"one needs to be constantly recording what is happening, what are the artisans saying, what sort of equipment are they asking for, what do they use it for, what has happened to their enterprises"(NG8/1.1).* As much of the gender and development literature points out, if women are absent and a gender perspective is not applied to the data gathering, women's voices will not be heard.

Attempting to establish good practice for product development and a strategy to get women's technology needs on the light engineering agenda within the organisation the Gender-Technology Expert is trying; *" to discuss with people in Zimbabwe the possibility of setting up groups of women, with the specific aim of talking about getting them to identify things that would be useful to them, or changes that could be made to existing products and facilitating the links with artisans, small-scale manufacturers, light engineering, to get those products produced and tested"(NG1/5.1).* There is a recognition that *"that's all about product design of course.."(NG1/5.2).*

The Project Manager(LEP) noted a move towards a more holistic approach to project development and implementation; *"we as project managers see a lot of people scattered around doing a lot of different things that aren't all that different and that could come together and enhance each other. Donors I can think of, charity projects for instance, are very keen on a more holistic approach. I hope its*

not just a trend, its just development coming of age, its just developing itself. Development developing itself into something that is more effective."(NG7/13.3). In the example of the Light Engineering Project this would entail bringing it together with agro-processing and building materials to provide a support package for small businesses. The importance of considering gender at the outset of this is unlikely to be acted on by the Project Manager(LEP) from personal commitment to the issues, although organisational and donor pressure might ensure a degree of implementation. The holistic approach has potential as a model of good practice if gender is not allowed to slip through the net.

Case 2: Technological Capability and Enterprise Development In Zimbabwe Project - Small Manufacturing Industries (SMIs)

The rationale for the Technological Capability and Enterprise Development project is based on the identification of a number of "key deficiencies" in Small Manufacturing Industries (SMIs). These range from skills and innovation in identifying opportunities for products to limited capabilities for determining technical problems (Sunga, 1997). Technological capabilities, as described by Biggs et al (1995) are limited but should involve the "design of products and changes and improvements to existing designs".

The male Project Manager(SMI) developing the project proposal was particularly vociferous about gender issues and their relationship to manufacturing and production. There are a number of quotes from his interview which express antagonism and aggression towards the policies. This is both at personal and practical levels.

In ITDG, managers, as senior advisors have to give their approval for project proposals. When the Project Manager for the SMI project presented the proposal to the organisation's Gender-Technology Expert he specifically sent *"a note saying I'm not too clear about how I'm going to be incorporating the gender dimension, could you assist..."(NG6/10.1).* Gender was covered by adding "and women" at the

end of a sentence in the first draft. After discussion with the Gender-Technology Expert and with time the Project Manager did find that; *"there are so many things, in terms of linkage capabilities for instance, as I began to read, there are so many influences it could be that women are better in linking with organisations and how can we assist in making them link better and more strategically. You begin to see that there is space for it but the original thinking did not incorporate it as such"(NG6/10.1).* How far this will be taken up in the ensuing project proposals and project implementation is yet to be seen.

The need for economic viability within the capitalist framework provides a legitimate way of marginalising gender issues (see Beall, 1999). This is indicated throughout the interview with the Project Manager(SMIs), despite acknowledged attempts being made from within the organisation to formalise gender policy, to ensure it is implemented and moved beyond the symbolic. He says; *"people now say you have to control for the gender dimension and you have to find ways of controlling for it beyond just to count there are so many women employees, so many women owners"(NG6/8.1).* This is perceived to be a top down policy decision and there is considerable doubt about its purpose in the mind of the Project Manager(SMIs); *"Maybe that is useful, but what does that mean in terms of operation, in terms of effectiveness and how different is that meaning from the male counterparts, that sort of thing"(NG6/8.1).* The quote illustrates the male attack of what does it mean for men - forgetting that gender refers to both men and women. The organisation's gender policy in relation to technology is a source of friction and project implementation becomes a battleground for patriarchy versus change (Banerjee, 1985). The Project Manager(SMIs) observes; *"you find that most NGOs', if they address the question, they're doing it purely out of administrative considerations, more or less on the policy of the organisation than on the actual desire to do that"(NG6/8.3).* Regardless of whether this is an accurate observation or not, the fact that an individual within an NGO perceives it to be so indicates the depth of antagonism towards gender issues.

Chakravarthy's (1992) observation that women are rarely supported by improved and new technologies is explained by the nature / culture dualism reflected in the Project Manager's(SMIs) observation; *"...if you look in terms of the enterprises it*

depends on how you want to define manufacturing. If one takes out knitting which is officially manufacturing, and the crocheting, if you take that out, the whole equation changes...[..].. and the bigger the enterprises are, the less you see women"(NG6/8.2). Within the discourse of technology and manufacturing, craft is devalued. Women's manufacturing activities are further devalued within the patriarchal structure by being associated with the domestic and size matters! (Pearson, 1982).

There was a strong impression that the Project Manager(SMIs) felt threatened, his expertise and knowledge being undermined by gender and technology policy. He highlights the issue of rhetoric and theory versus practice and implementation when he suggests that the more academic orientated may; *"have a desire to find out and explain situations. But for, I think I'm right, for implementers...[..].. that's the reason why we always come up with figures that there are so many women and then that's the end of this"(NG6/9.1).* Finding out about gender is an academic activity and the Project Manager(SMIs) goes on to say; *"if they were really genuine about their intentions in this field I'm sure they could do a bit better than they are doing at the moment. Well it's my own assessment of the situation"(NG6/9.2).* Being non academic and an implementer is a positive position to take, a way to get round the gender issues again. In fact the Project Manager(SMIs) thinks it is only a *"few individuals who may be driven by this desire to understand and interpret things"(NG6/9.2).* The implication is that the Gender-Technology Expert is the only individual in the organisation driven to understand gender issues.

The Project Manager(SMIs) suggests that positive reinforcement for good practice is needed and that this would indicate genuine commitment for gender at management level; *"if you don't have that support, if you are a very good implementer who is taking care of that dimension, it wont get recognised anyway, judgement day comes and its not a parameter they use to measure your performance"(NG6/17.2).* The organisation's conviction is apparently something not put across by statements of gender being non negotiable. Cynicism is evident here - being used to get round gender issues, committed people will consider gender issues anyway.

The strength of technological determinism is revealed by the Project Manager's assertion that social and economic objectives *"need not be united as primary objectives"(NG6/5).* He suggests that they can rarely be pursued together. It is difficult to pursue economic viability and profit making and at the same time be socially sensitive to needs of the poor *"you don't make a living out of supplying products to a predominantly poor market, you don't."* This raises issues for ITDG and the move towards manufacturing and marketing. The reluctance to combine economic and social objectives is likely to result - does result in women being marginalised in economic development. Everts (1998) argues that the market can be an 'ally' but urges caution, the absence of women in any "user led innovation" will result in women being further disempowered. Women's interests and needs are prescribed by the dominant opinion, not necessarily dominant within the organisation or dominant in the organisation's policy but dominant in the mind of the Project Manager(SMI). Here the push for economic success can justifiably exclude women and is a way of 'getting round' the gender issue.

DESIGN

The two cases discussed previously illustrate the organisation's preoccupation with technology and little emphasis on design as identified by the literature (see Kennedy, 1985). The right products, Zoomers (1993) observes, not necessarily the right technology will help small and medium enterprises develop. Design clearly has a role to play here and although many of the organisation's projects aim to develop SMEs, the organisation has no explicit design policy. Design does happen but on an 'ad hoc' basis as case 3, additional responses from cases 1 and 2 and the responses to design issues from senior management reveal.

Case 3: Solar-Powered Lamp project - Intermediate Technology Consultants (ITC)

The solar-powered lamp project being undertaken by ITC focused on design and all its aspects; engineering, aesthetics and the market. The product was to be manufactured in Kenya as a consumer product with a potential global market. My asking about gender and design in the project influenced the Managing Director to think about how they had been approaching the design of the lamp. He says; *"what they were doing about a month ago was going through all the different features that people would look for, the customer specification which obviously includes what men prefer and what women prefer as well. Actually that's a good point, how much that was differentiated. Maybe we could get the project manager to just say a bit about that.. [...]...he and I did an exercise where we were just trying to see from our perspective what were the important features that people were looking for.. [...]...and then sort of home in on what are the really sensitive design issues that come out of that..[..].. and certainly there were gender issues in that. I know that for example they found that is was men who were more interested in being able to listen to the radio and the women were more interested in having light for the kids to do their homework (laughs). But its a good question whether that was actually differentiated in the market survey that they are doing at the moment "(NG4/4.4/5.1)*. Here the lamp is either a "consumer durable" (male use) or meeting

what is arguably a "basic need" (children's education). I suggested that it would be interesting to know who makes the purchasing decisions and the question of ownership. Managing Director says; *"its a good point. There is a market research report done by some Dutch people but I'm not sure they went into the gender aspects.."(NG4/5.2).*

ITC's Managing Director acknowledged that the solar-powered lamp project is an example where; *"we've all said yes, yes but how do we. Its probably easy for a group of researchers to come along with a questionnaire which says differentiate between women's and men's responses, it doesn't necessarily get you at the real issues.."(NG4/19.2).* Arguably the real issues are too uncomfortable to deal with. The real issues can also be put aside by arguing that they are based on cultural norms and development organisations cannot start to interfere with these structures. Technology as gender neutral is a key argument for the defence here and again comes to the fore as a way of 'getting round it'. In the example of the lamp project the team have already identified gender differences in use which reflect cultural norms; men wanting a lamp for personal use and women for family use. The lamp is being designed with men's "needs" as the cultural norm, as a product designer I find it interesting to conjecture how the design might differ if women's needs were used as the cultural norm. Development practitioners choose to ignore gender issues and women's needs whilst knowing 'it' needs to be done. The Gender-Technology Expert's observation that generally *"we find it, the whole issue of intra-household relationships very difficult to handle"(NG1/2.1)* highlights the difficulty the consultancy is having addressing the issues.

During the interview with the consultancy's Managing Director and Business-Improvement Manager it became clear that the Business-Improvement Manager does not consider gender to be a key component of the solar lamp project whilst the Managing Director thinks differently. The Managing Director tries to return to gender issues; *"The marketing is going to be interesting, highlights a lot of other gender issues"(NG4/14.1).* The Business-Improvement Manager's response is to read from a confidential marketing report that indicates the level at which women are going to be involved in the design. He states that women will be involved in; *"product promotion demonstrations, initial sales at local women's groups, known as*

merry go round groups"(NG5/14.1). It is clear that at this stage women's technology needs will not be responded to through the design of the lamp, they are consumers not participators in the process. The implicit difference of opinion between the two managers is interesting and illustrates the importance of personal commitment and the potential for change if these differences are recognised.

The Business-Improvement Manager was resistant to discussion on gender in relation to the lamp design. The pressure to consider the issue was coming from the Managing Director; *"we just ought to make sure that they (the marketing group) do include looking at, things like... is it men or women who make purchasing decisions, what the different requirements are..."(NG4/6.1)*. He was hesitant in expressing this idea and the Business-Improvement Manager was reluctant to consider it. I noted some antagonism between the two men. The Business-Improvement Manager stated; *"The feedback so far is its almost always men but that's not been qualified, that's the impression given. This came out quite strongly when we talked about this issue of 'easy to use by the whole household' (looking at list of priorities), and it was fairly clear that the view round the table was that it wouldn't need to be used by the whole household because the man of the household wouldn't allow it to be taken by the children as well. But specific to women I don't know, I don't know"(NG5/6.2)*. So women's needs have not been considered at all in the design priorities. Children have been thought about and the design parameters neatly prescribed to avoid having to consider ease of use by the whole household. Men's needs are once again to the fore and receiving considerable attention - women's need's are invisible. The one mention of women is in terms of their children's needs. Why does a man need light to listen to the radio? The cultural production of gender is reinforced by women's invisibility. Male power is not only embodied in the physical design of the technology (Wajcman, 1991) but in the design parameters that are used to determine the physical design.

Technological determinism is emphasised by the Business-Improvement Manager who relies on charts, Quality Function Deployment (QFD), and this continues to be an effective way of getting round gender issues in relation to technology. The interview is frequently turned round to talking about the technical concerns of the solar-powered lamp. For example he says; *"There's another chart around some*

where with a component level analysis. Here we are (pauses to look at the technical data), so we relate those to the priority design requirements and then that focuses the individual groups..."(NG5/13.4). One feels bamboozled into believing that a good job is being done but at no stage is gender an issue or even visible. Users, male or female, are apparently absent except in the preconceptions of the person drawing up the list of priorities. This is despite Wilemon & Millson's (1994:265) assertion that QFD has as a major objective, the incorporation of "customer requirements into new products at the most rudimentary level of the manufacturing process". The emphasis on technology and function denies creativity (Reese, 1986). Again if gender is left out at the beginning of the overall process, from initial brainstorming to decisions about consumer requirements, the technical data will also be affected. I suspect that what happens is that once considerable financial and time resources have been spent on the project, the willingness to make design changes in response to women's needs is severely curtailed. The 'technology is neutral' argument masks the belief that technology is a male preserve - hands off. The Business-Improvement Manager failed to address the gender issue throughout the interview, taking refuge in his list of priorities and QFD chart; *"So this is* (indicating chart) *to generate a comprehensive brief, it doesn't address the design process itself. So when you break it down, there's another one here somewhere that looks at the component level and then we ask specialist designers to come up with their priorities and issues and then its the industrial designer's job to put it all together"(NG5/8.6&9.1).*

There seems to be a confusion in ITDG's ITC Managing Director's mind between engineers and product designers; *"I think in the past they've made mistakes by employing people who are interested in the engineering and take forever to finalise a design so I don't think they have really used designers as such"(NG4/15.3).* Interestingly the techniques used by ITC's Business-Improvement Manager in the design process are time consuming and forever is being taken to finalise the lamp design. The list of priorities drawn up by the Business-Improvement Manager did not mention the lamp's aesthetics; *"Well no, that's the job of the industrial designer to take on board the requirements, take on board the design issues that have a direct relevance to the priority requirements, then its the creativity and innovation of the designer"(NG4/6.3).* The Business-Improvement Manager was defensive about

'his' list being found wanting in anyway. He made a convincing argument for the thoroughness of the list of priorities. There was also the argument that the lamp was still in the concept stage and this effectively got round the gender issue; *"Well the point of this (list) is to ensure that anyone involved in the design process doesn't simply design based on their own preconceptions so we're right back to pre-concept stage and who, at this stage you can actually say well, who on earth wants a lantern anyway..."(NG4/6.5)*. The issue of ownership is very strong in this interview, the Manager constantly referring to 'his' list of priorities.

ITDG - awareness of design

The interview with the Chief Executive Officer and Gender-Technology Expert shows them thinking through what product design actually is: CEO, *"You see we do do design if you actually start to think about it"*; Gender-Technology Expert, "*Yes we do"*; CEO, "We *actually do a lot of design"*; Gender-technology Expert, "*We don't actually put it in a box and call it product design"(NG1&2/11.6)*. Product design "just gets done", there was a similar response to design from ITDG's consultancy's Business-Improvement Manager and its involvement with a marketing company where they get friends to do the product design work on an informal basis.

As the interviewer with a background in product design my questions prompted the Gender-Technology Expert to think about product design in relation to development and technology: Gender-Technology Expert, *"I mean Mirjam's questions are sort of leading me to think this issue, this whole issue of product design is not something that we discuss. I mean it's handled by engineers. We don't have product designers do we? Is it done as a consultancy sometimes?"*; CEO, "*I think we might have the odd covert designer who may have that qualification in their background but they're not employed to be that particularly as far as I know"(NG1&2/7.3)*. Product design is a covert activity to be kept in the closet. During an informal discussion with the Gender-Technology Expert and a colleague seated nearby, I suggested that it would be good to consider product design at the beginning of a project rather than

after the marketing, for example in relation to the solar-powered lamp: Gender-Technology Expert, *"Well I know what I was struck by when I first met Mirjam was that we don't , it's not really an issue for our technology but if we're serious about marketing and commercialisation it's something that's got to be going all the way through as well as from a gender perspective because that also tacks on the issues of usage and the obsession with ergonomics, but that must be part of it as well"*; Colleague, *"we rarely set out to make a consumer product do we? I mean the stove is about the only thing I can ever think of that we set out from day one to make a consumer product. Commercialisation tends to come on the end of things, if we've got something that works lets commercialise it..."(NG1/a3.3).*

Again product design is only associated with consumer products, appropriate technology has not been considered as a consumer product. In many instances, if not most, communities and individuals did not choose what technology was foisted upon them in the name of development. This is certainly the case in the early days of ITDG and continues in some projects. The end user had little or no role to play in the development of technology regardless of their gender.

Recognition of the need for design

In relation to the Technological Capability and Enterprise Development (SMIs) project in Zimbabwe, the Project Manager says; *"I'm sure product design is a clear winner in manufacturing and light engineering, also when you go into the informal sector it is all the same products. You wonder what's happened, I mean not only in Zimbabwe, it's all over"(NG6/17.3).* However, the Project Manager's(SMIs) initial enthusiasm for product design indicated in the informal interview which took place 14 months earlier appears to have been swamped if not lost, under a weight of project proposals, funding bids and an emphasis on engineering which omits design as part of the process; *"they've (in Zimbabwe) sort of shied away from the product itself and in this competitive market environment you can't afford to ignore that part of it"(NG6/a1.2)*, The key components of the proposed project are process, product and production engineering, all areas where design can and should have a key role to play. This is something that the Project Manager(SMIs)

also touched on in the exploratory interview; *"I'm sure I'm just jumping here, I don't think people talk of designing as a subject in many cases. It's something they assume is in the product but I don't think they've ever really in many cases stopped to think about what really are the design parameters, what really are the design issues to grapple with"(NG6/a3.5).* Despite an uncertainty, the Project Manager(SMIs) accurately describes the invisibility of formal design in the product development process and suggests that this also happens within his organisation; *"Even in IT I don't think we methodologically think through design questions and as a result we gloss over things, make terrible mistakes along the way and when things don't work we tend to blame other things, maybe we are to blame"(NG6/a3.5).*

ITDG's Intermediate Technology Consultancy contributed expertise to the SMIs project in Zimbabwe. The consultancy's Business-Improvement Manager observes; *"There's quite a strong feeling that some of the most effective support you can give to SMIs is not capital at all, its actually product design but closely integrated with manufacturing design, manufacturing systems.."(NG5/15.6).* Importantly the issue of product design had obviously been discussed with the SMI project team indicating that the project's Manager was not simply responding to my interest in the area during his interview.

The ITDG survey of women entrepreneurs for the Light Engineering project touched on craft and I suggested to the Project Team-Member that there may be a market for production technology / capital goods for craft production. She responded; *"As far as I remember we haven't done any particular work on crafts. We got the pottery thing in the report but we haven't investigated it further"(NG8/16.1).* Discussion on craft led to thoughts on equipment for the construction business *"Maybe one aspect would be finding ways of making it lighter (the block process) because there are so many women's co-operatives who are into brick making...[..].. Maybe one needs to find out what the women think about the construction equipment"(NG8/16.3).* As a result of my intervention, the Team-Member starts to think through women's technology needs and at one point 'brainstormed' on the design of the grinding mill coming up with ideas on how a female grinding mill operator might find aspects of its use difficult. She confidently

described the difficulties a female miller might have and possible solutions; *"maybe if there was a way of having a belt or bag in this way that you just pour it and it flows that kind of design, also that kind of discussion would maybe help in design.. [..].. So may be that kind of design, if you speak to women such kind of comments I'm sure would come up..[...] So if you employ a lady miller, she might not manage. So maybe if she's asked to, you have ideas as to how this problem can be solved, I don't know!"(NG8/9.1)*. The Team-Member also identified similar difficulties with the dehuller. She is making tentative moves towards recognising women users as a resource for innovation (Gamser, 1988) and the potential of incremental change (Walsh et al, 1992).

ITDG's Gender-technology Expert is trying to set up a project; *"which is about product design really... I mean the hypothesis... the classic gender theory tells us that women's needs are less visible because of all sorts of factors to do with status, actors in the decision making process blah, blah, blah, so if you extend that to technology you've got a situation where women's needs with technology are less visible and the result of that is that fewer things are designed, there are fewer products available for them for the kinds of tasks that they do..[..]. not only are products not designed but there are also a lot of products which with a bit of adjustment would be a lot more appropriate"(NG1/4.4).*

Absence of the user in design process - gender

Claims are made for knowing the market and interestingly the Project Manager(LEP) commented that if the product does not look right the consumer will not take a risk yet products are presented to the user without their involvement in any way. The Project Manager(LEP) asserts that he designs; *"for simplicity but people here are very conservative, they don't have much money to spend and if it doesn't look like the thing that's on the market they're wary of it even if its half the price and is does seem to do the same job..[...]... and they're not, quite rightly so, they're not prepared to take a risk with something that just doesn't look right"(NG7/6.3).* Involving the user in the design of the simpler, more efficient

version may be a way round this. Asking for feedback at the end of the process is not the most efficient use of limited time and resources.

ITDG's Gender-Technology Expert does acknowledge that aesthetics are an important part of a product's acceptability. As the interview progressed I suggested that there may be a problem with the label product design generally, meaning its association with aesthetics rather than engineering. She responded; *"we say the way things are designed can exclude one group or another and technology tends to disempower women, it excludes women.. because the majority of designers don't think about those different needs having different implications for design specifications"(NG1/15.3)*. So the word design is used in the organisation's discourse and here means engineer. The Gender-Technology Expert's observation links to the work being done by ITC on the solar powered lamp. The lack of gender disaggregated information regarding needs is slowly being acknowledged by the project but technical specifications for the lamp have already been laid down. Costs and time can easily be used as the rationale for not responding to women's requirements and claims for the project's inherent gender neutrality, a lamp is a lamp is a lamp, will undoubtedly be made.

Being participatory is equated with asking questions of a client group and differentiating between different sectors of the population. ITC's Managing Director had attended a meeting discussing environmentally sound technologies where the issue of bringing together the technologists and business people was raised. He says; *"I think if technology has been designed in the lab there's a huge process that has to then go on to involve participation or it wont be successful. And I was talking about markets and involvement of consumers and affordability and things like that and it was clear that people hadn't thought about things like that at all. They were just sort of making the assumption that if technology had been developed in the lab, it was something that could be transferred on a piece of paper..."(NG4/8.1)*. This is very much reflected in the technology policy literature and the belief in development discourse that technology is neutral.

The Gender-technology Expert discussed a conversation she had with a colleague, a male engineer; *"I was actually doing my talk on what priorities you take and he was saying that he'd never thought about it before in that way, you can design*

things around different priorities..[..].. I thought it was quite interesting ..he hadn't realised that the order could be changed and that he hadn't really thought it through in terms of small scale equipment"(NG1/17.1). This is very much what is happening in the solar-powered lamp project. The obsession with drawing up lists of priorities does have *"implications for the design"* and as she continues to say, changing round the priorities; *"may not produce what in their (*engineers*) terms, is the most effective machine or the most efficient machine at the end of it but it may be for somebody else given the limitations of cash flow or whatever"(NG1/17.2).*

The Technology-Policy Officer's response to questions was clearly influenced by my background and led to him thinking ideas through; *"So your kind of hypothesis if you like, is that product design can have an impact on the inclusion of women at, in all stages of the process or what? You've got design, manufacturing, marketing if you like and then you've got the policy environment and you're saying that design can influence all of that..[..].. You're listening to the whole lot, you don't have to but you can do and that's the whole argument about design being a central role you know, it links marketing with manufacturing in the context of small enterprise in developing countries..[..]... you can design products that are manufacturable with simple techniques and appeal to the market at the same time, again its a central role, its quite a good model that one"(NG3/6&7.2)*. Involving women in the design of capital goods is a positive way, I suggest, of opening up technology and technological decision making to them. Being given the opportunity to discuss their technological needs puts women in a position of some control and in the long run may encourage some to become involved in technology production. It would also break down the 'gendered' technological determinism that pervades international technology policy implementation.

Product design - a 'trick' marketing tool

Throughout the interview with the Light Engineering Project Manager he is reluctant to acknowledge the importance of aesthetics. Adding graphics to a product may make it look more like its competitors and less like an 'Appropriate Technology'

solution. I asked the Project Manager (LEP)f he thought it would make a difference. He replied; *"its a good point. We may do something about that in the future and it does sell things. Its nothing to do, well I suppose it is to do with design. But it is not to do with marketing or selling. I mean the equipment is the same piece of equipment"(NG7/7.1).*

There is still a reluctance to consider the aesthetics of the equipment, the argument being that it can be taken too far but *"making it look smart is half the trick"(NG7/8.1).* The use of the word trick to describe the role of aesthetics reveals a general unease with the area. The Project Manager's(LEP) experience of design at school when it replaced the more traditional metal and woodwork; *"just as they changed and everybody was a bit confused and we got some weirdo and ex-hippies in. And one guy was very good..[..].. he went on a course for a year and then came back and started to talk about divergent thinking and convergent thinking and that was great fun and we loved it, we didn't know what the hell he was on about. It was really good it helped me a lot"(NG7/8.3).* Here design is associated with weirdoes, ex-hippies, divergent and convergent thinking, things not of the mainstream. I think this illustrates a more universal belief about design, that it is not concerned with the nitty gritty real world, particularly hands on engineering that is a masculine activity. It is a closet link to a non-masculine culture. The words chosen by ITDG's CEO, *"the odd covert designer"(NG2/7.3)*, when asked if there are any product designers employed by the organisation, gives some indication of the position of product design within the organisation. This reflects other interviewees, e.g. the Project Manager(LEP) who talks about hippies etc. I suggest the language used when talking about designers reflects the perception of product design as being 'arty' and not to be taken too seriously, unlike engineering. The masculinity of engineering cannot be questioned but the masculinity of designers is not so clear.

The Technology-Policy Officer (manufacturing), tends to think of design *"as a boffin in a corner or sitting at a CAD screen"* but it occurs to him that design in the smaller enterprises is informal but is happening *(NG3/7.3)*. The perception of what and who designers are even if this is unconscious does influence the way design is considered in project development or rather not considered. Designers' are

concerned with the *"aesthetics stuff"(NG3/7.3)*. I suggested that aesthetics were usually completely ignored in projects dealing with manufacturing. The Technology-Policy Officer replied; *"It was interesting in Sudan seeing people painting go faster stripes and having branding on oil presses. There was this guy making oil presses and this was his marketing technique so he'd considered aesthetics you know. Really interesting"(NG3/8.1)*.

The belief that design is essentially superficial is indicated by the CEO discussing a producer; *"what he ended up doing was making them (tools) marketable by making them more attractive. He actually painted the handles black, that sort of stuff, really simple, I mean really simple...[..].. You could say that making something black then selling it is cheating really!"(NG2/12.2)*. The Gender-Technology Expert too has an example where; *"they talked with a group of women about this piece of machinery and what they wanted was it blue!"(NG1/12.3)*. But design is more than a "promotional veneer" (Lorenz, 1986).

ITDG's ITC employs a marketing company, International Development Enterprises (IDE) to do market research in developing countries for particular products, currently for the solar-powered lamp. ITC's Business-Improvement Manager says; *"They tend to do the product design on a very thin shoe string...[..].. Their argument which is valid to a degree is they're always having to design on the basis of affordability.. [...].. The proportional effort you need to put onto the marketing campaign for one extra little feature which adds cost will not necessarily cover that investment.."(NG5/14.3)*. IDE do not use designers but rely *"on contacts and mates who have an interest so they rely a lot on people like that"(NG5/15.2)*.

The dramatic change of emphasis for ITDG, the concentration on technology for profit rather than technology to meet basic needs as epitomised in ITDG publications is voiced by the Technology-Policy Officer who suggests; *"we're very profit focused and the way that we look at that is through product and markets and market led basically, not product led because that's my understanding of how it works. You can challenge that if you like but being in touch with the market place seems to be the place where innovation comes from.."(NG3/3.2)*. Obviously the

products being produced may well meet basic needs but the discourse has shifted into mainstream capitalism although maximising profit is not a primary goal.

International Networks

The Gender-Technology Expert is involved, at a personal level, with external macro and micro level policy networks (Dowding, 1994). As a committed individual she is able to influence gender and technology policy; "*I've always seen that from my perspective one of our potential audiences... women, gender experts they are still not particularly aware as we would see it, of the gender and technology issues.. for example... the woman who was one of the gender people in Oxfam once said 'Oh I want a list of technologies that are suitable for women', and I was saying well that's not the way we approach it.... we don't just see it necessarily, what's on the shelves"(NG1/1.1)*. Even among gender experts technology is neutral, something that can be taken off the shelf and slotted in to the development process. The Gender-Technology Expert suggests that there is no reason for women not to work in technology; *"the reasons they don't are to do with the external issues of status and with ownership"(NG1/2.1)*.

United Nations

The Gender-Technology Expert had carried out consultancy as an 'expert' for UNIDO and UNCTAD. Her experiences with the UN organisations reflect Gordenker & Weiss's (1995) observation that the UN will accept experts as equals (UNIDO) or distance themselves to the point of ignoring what is said (UNCTAD). The Gender-Technology Expert's work with UNIDO is discussed in more detail in Chapter 7 in the context of the UN organisation itself. Essentially she clearly felt in the position to have "*quite a go at them*"(NG1/a7.3) about the invisibility of gender.

The Gender-Technology Expert was directly involved with the UN 's Commission for Science and Technology Development's publication Missing Links (UNCSTD, 1995). The publication was put together by the UN's Gender Working Group (GWG), the Gender-Technology Expert was a co-opted, receiving consultative status; *"I was involved in that UNCSTD thing and that was very hard work.. really hard work with these guys because they all thought it was a joke. I mean not all of*

them, nobody on the Commission..[..].. were into this and even at the end, even when we'd finished I mean, they still thought that they were being nice to women, that's what they were really doing"(NG1/a9.2). There were two men who were, she says; *"sort of half way there but most of the other delegates were not wanting to be there at all...[..].. they wouldn't have been working on the gender working group is they'd had their choice. Their governments told them to go"(NG1/a9.2).* A report was published and it is good, the Gender-Technology Expert puts this down to the *"very hard work of two of the people who were working alongside the delegates".* The UN delegates were reluctant to go to the meeting in the first place and to take on board the issues. The committee worked because of the commitment of individuals determined to use the opportunity to effect change. However although women may have had a voice through their "consultative status" they have no vote on the UN's "final decisions and policies" (D'Amico, 1999:38).

The description the Chair of UNCSTD's Gender Working Group gives of the working processes gives some indication of the situation the Gender-Technology Expert found. The Chair notes that the "'esprit de corps' that developed does not mean that there were no differences of opinion or tensions... They tended to crystallise around questions such as 'How much evidence is required before an hypothesis can be proven..'"(Oldham, 1995: xii). The committee was formally structured and the Gender-Technology Expert felt that the invited 'expert advisors' were there to listen not to; *"make interventions. So (*a delegate*) and a lot of other delegates were going on saying 'give us the evidence, we want hard evidence', and I just got so pissed off that I stood up and said look there has been evidence around for twenty years and every bit of evidence that is obtained piles on top of another load of evidence and is not the onus on the UN to tell <u>us</u> that it's doing something with the evidence rather than on the onus on us to keep production more evidence"(NG1/a10.3).* Arguably the formal structure of the meeting was designed to prevent women's voices being heard providing men a highly institutionalised way of 'getting round' gender issues. Getting women's needs heard required subversive action on the part of an individual but the Expert says *"I'm just so fed up being asked to prove the case"(NG1/a10.3).* Empirical evidence, as Kaplan (1993) says, may be good but it remains hard to draw general principles and predictions from it. The Gender-Technology Expert suggests that the

responses to her interjection depended on *"which side you're on"*, so gender issues are something on which to take sides, a battle ground of opinions. The network of predominantly men maintains it power and demands facts before policy (Huyer, 1998). . The status quo is supported by patriarchy and capitalism. The Gender-Technology Expert's action is perhaps an example of good practice in the face of huge odds and limited bargaining power (Huyer, 1998).

The Gender-Technology Expert's participation in the UN policy setting should have confirmed her 'expert' status within ITDG itself and confirmed the centrality of gender and technology issues to the organisation's agenda. Her involvement in the international policy arena afforded her some degree of power within the organisation both with colleagues antagonistic to gender and technology issues and the CEO who could not 'sideline' the issues as secondary to the organisation's main agenda. However, it is evident from the interview with the Expert that she was still having to work, as a committed individual, with colleagues set on 'getting round' the issues.

FINDINGS

Different perceptions of gender policy are evident within the organisation from project manager / implementer and senior manager / policy formulator. There is grudging recognition of change from project managers and exasperation from the Gender-Technology Expert. Her determination and essentially subversive action have precipitated change within the organisation. It is still better, I suggest, to have gender as a hoop to be jumped through than not there at all. The levels of discomfort with the policy are high within the organisation and are being expressed through aggression in some cases (both project managers interviewed in Zimbabwe) but there is an underlying feeling that things do have to change although individuals may have to be dragged kicking and screaming all the way.

A 'gendered' technological determinism pervades the organisation, the Gender-Technology Expert has been deconstructing this bit by bit but the strength of this discourse throughout the organisation, certainly at project implementation level,

results in its continued domination. This is evidenced in the projects running concurrently: gender / women specific and manufacturing / engineering specific and emphasises the nature/culture dualism that exists as a contradiction in supposedly gender aware technology policy. The organisation strongly reflects the malestream technology policy literature that rarely, if ever, mentions women and / or gender.

Gender is clearly thought of as an added extra rather than integral for all projects even though there are no longer claims of gender neutrality made in project reviews. Projects such as light engineering and small / medium manufacturing enterprises start from an androcentric foundation simply because of the association of the words 'engineering' and 'manufacturing' with the masculine. It is a challenge to masculinities to take gender issues into consideration at the outset of these projects. The project managers are more likely to be male in projects dealing with engineering and manufacturing and it may prove difficult to establish parameters of success, certainly in the limited project time available.

The implementation of gender policy, the aim of which is women's empowerment through technology, has to struggle with technological determinism, an aspect of patriarchy. The claim is made by a project manager that social and economic objectives need not be combined. Gender is clearly identified as a social rather than economic factor, justifying its exclusion from technology (and hence the rationale of the organisation itself). The social process of technology is well documented but women are not being acknowledged as part of the mainstream.

The existence of the Gender-Technology Expert at senior level within the organisation did influence the project managers although the gender policy was identified with an individual rather than integral to the organisation. The international policy of donor organisations also ensured that gender issues could not be ignored and provided the Gender-Technology Expert with considerable leverage for insisting gender was addressed at the implementation level. This can further entrench feelings of resentment and loss of control on the part of the male implementers. Their area of 'expertise', technology, is being challenged by women and / or gender at all levels including foreigners with money. Attempts are made to

keep women's technology associated with the domestic and private, defending the invisibility of women's technology needs, particularly in relation to production.

The male dominated implementation process indicated both explicit and implicit tactics for 'getting round' gender issues. There are similarities between male implementers for example both male project managers in Zimbabwe suggest that women entrepreneurs are doing very well already. The implication is that it is men who are being ignored. They point to the 'spoiling' tactics of using numbers to address issues of gender in project evaluations requested by the organisational hierarchy. The cases reveal the strength of a 'gendered' technological determinism within the organisation. The failure of the organisation to address gender relations reinforces the technology determinism and highlights the nature / culture dualism.

The women specific project, Do-It-Herself, has had very positive outcomes and is evidence that given the opportunity, women can innovate and respond to technology. There is in fact evidence of a reasonably powerful 'women's' entrepreneurship which is not being engaged with by the 'mainstream' activities of the organisation, the policy makers or implementers. Male implementers reluctantly acknowledge gender as a development issue but claim implementing gender policy through the technology based projects is problematic. The 'big' sectoral areas have to be tackled first to establish a project before other concerns can be considered. There is evidence of protectionist bluster that hints at the unsettling of the status quo. The challenge to male identity is met by attempts to dismiss women as incapable of doing men's work. The stereotype of women being technologically incapable is challenged by projects and this then challenges the cultural stereotype of idealised masculinity (see Scott, 1995).

ITDG's CEO's insistence that "gender is not negotiable" is possibly a stick rather than a carrot but perhaps the situation has reached that point of needing a determined stance from the top of an organisation. Individuals feel less able to dismiss symbolic policy if there are structures in place that insist on policy being implemented. However, the "not negotiable" is rather an ambiguous stick and the attempts at top-down policy implementation are inadequate when there is a lack of

committed individuals throughout the organisation, resulting in an equally inadequate policy network at ground level.

The organisation works internationally and this raises the issue of inequality of power between the policy formulators in the Northern head office and the implementers in the Southern offices. Within the one organisation the dilemmas of imperialism and paternalism overlay gender and technology policy implementation. Levels of cultural imposition can be claimed, tradition used to subvert the implementation of gender policy. Equally, a paternalist "we know best" attitude can be seen from the top.

Trying to deal with this complex interaction within the organisation could result in complete inertia. However, the persistence of one woman is resulting in incremental change within the organisation and in project implementation. It is clear that individual commitment to the issues is essential for gender policy implementation. When an individual begins to see change this can be acted on to gather momentum.

ITDG is shown to be a key organisation in the implementation structure of international policy for gender and technology. As Edwards (1994) asserts, NGOs link micro-level experience with macro-level policy. This linkage, Edwards notes, invariably involves "multiple accountabilities" including donors, governments (own and the nation-state where the project is being implemented), project recipients etc. (also see Axinn & Axinn, 1997; Powell & Seddon, 1997). The organisation highlights the conflict between individual commitment to and "getting round" gender issues in policy implementation. Subversive action is carried out by both sets of protagonists (see Jackson, 1997). The existence of international policy supports individual commitment and the ambiguity of organisational policy can also be called on to manipulate the policy implementers. Conversely, ambiguous organisational policy can be used to get round the effective implementation of policy which challenges personal beliefs and values (Edwards, 1994; Axinn & Axinn, 1997).

The Gender-Technology Expert had the opportunity to extend subversive action to United Nation organisations and influence the implementation and formulation of

gender and technology policy. Similar arguments are indicated in the NGO and the UN in that there is clearly symbolic gender policy but in relation to technology there are 'official' extenuating circumstances that allow these to be 'got round'. Paradoxically both the gender neutrality of technology and its masculine gendering are used by project implementers and technology policy formulators. The call for facts and evidence is made in an attempt to block any subversive action. However, the interviews suggest that ITDG as an organisation has made some progress in changing the "institutionalised" status quo with regard to technology and gender (see Edwards, 1994:121). Gender will no longer be a "new issue" that has to fit with the organisation's goals and ideology (Kardam, 1991) but will become part of the ideology - positively mainstreamed perhaps.

The organisation is increasingly moving into technology for production for the market and arguably women have become an exploitable market within this relatively new ideology. The technological power of men may well be strengthened by this approach. It is necessary and positive to consider women's technology needs but attempts to do this in a reasonably participatory way are being side-stepped by the male implementers. Talking to the invisible is impossible and the invisible remain in an passive role. Issues of power structures are 'got round' in the name of gender awareness. Brohman (1996) argues that for true 'bottom-up' development there has to be fundamental change in the global status quo. Also, Tinker (1999:92) asks, will the "humanitarian predilections [of] most NGOs alter the market oriented paradigm that so dominates today". Arguably ITDG is not working towards fundamental change in the global status quo but rather conversely, is responding to capitalist market forces, the global dominant paradigm.

Design has been largely ignored by the organisation, the interviewees generally miss the point that product design can and should incorporate engineering, ergonomics, the market, aesthetics as a complete package (which is not to suggest that product design is the perfect answer to all ills). The external influence of the researcher caused individuals to think about design and to suggest that design does happen in an informal way in projects. The associations of design with art carried out by the 'odd covert designer' indicates an ambivalence but also a lack of understanding of what design actually is. Art and closet designers suggest a challenge to masculinity, an undermining of the masculinity of technology.

However, as interviews progressed, the potential of design for manufacturing and light engineering projects was identified. This was largely seen in relation to the competitive market environment first, participatory processes second if at all.

Where design was explicitly on the agenda, the neutrality of technology and cultural sensitivity were used to 'get round' gender issues in the design of artefacts. For example, when a gender perspective is applied to the design issues of the solar-powered lamp, the androcentrism of the approach is highlighted. Although women are identified as consumers, this is a passive role. The female Team Member of the Light Engineering project was able to recognise the potential of involving women users of production technology in its design. The value of design was also being realised by the Gender-Technology Expert. Women can be a resource for product innovation as well as an exploitable market.

CHAPTER SIX

GOVERNMENTAL ORGANISATIONS

Two national, government organisations, the Department for International Development (DFID) and the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ -German Agency for Technical Co-operation), participated in the study (see organisations' sections below for more details). These international development organisations are described as having bilateral links "between themselves and governments or other organizations in other countries" (Axinn & Axinn, 1997:233). These bilateral links are used to implement development policy in a number of sectors, for example; agriculture, infrastructure, income generation, health etc. As governmental departments, both organisations are linked to the European Union where they are variously involved in agenda setting, policy formulation and implementation. These bilateral organisations frequently implement international development policy with an arguably multilateral remit through receiving funds from the EU (there having to be the agreement of the Member States that make up the 'whole'). The make up of an intergovernmental, international organisation such as the EU is dependant on how the governments which make up the organisation, reconcile their interests (see Taylor, 1993). Internal to the organisation is the long-term difficulties experienced by women in establishing "transnational" gender policy (see Hoskyns, 1999). There is boundless documentation on equal opportunities for men and women and for the purposes of the research this has been necessarily restricted to the European Council Decision of December 1995 on a medium term Community action programme on equal opportunities for men and women 1996 to 2000. (See figure. 3).

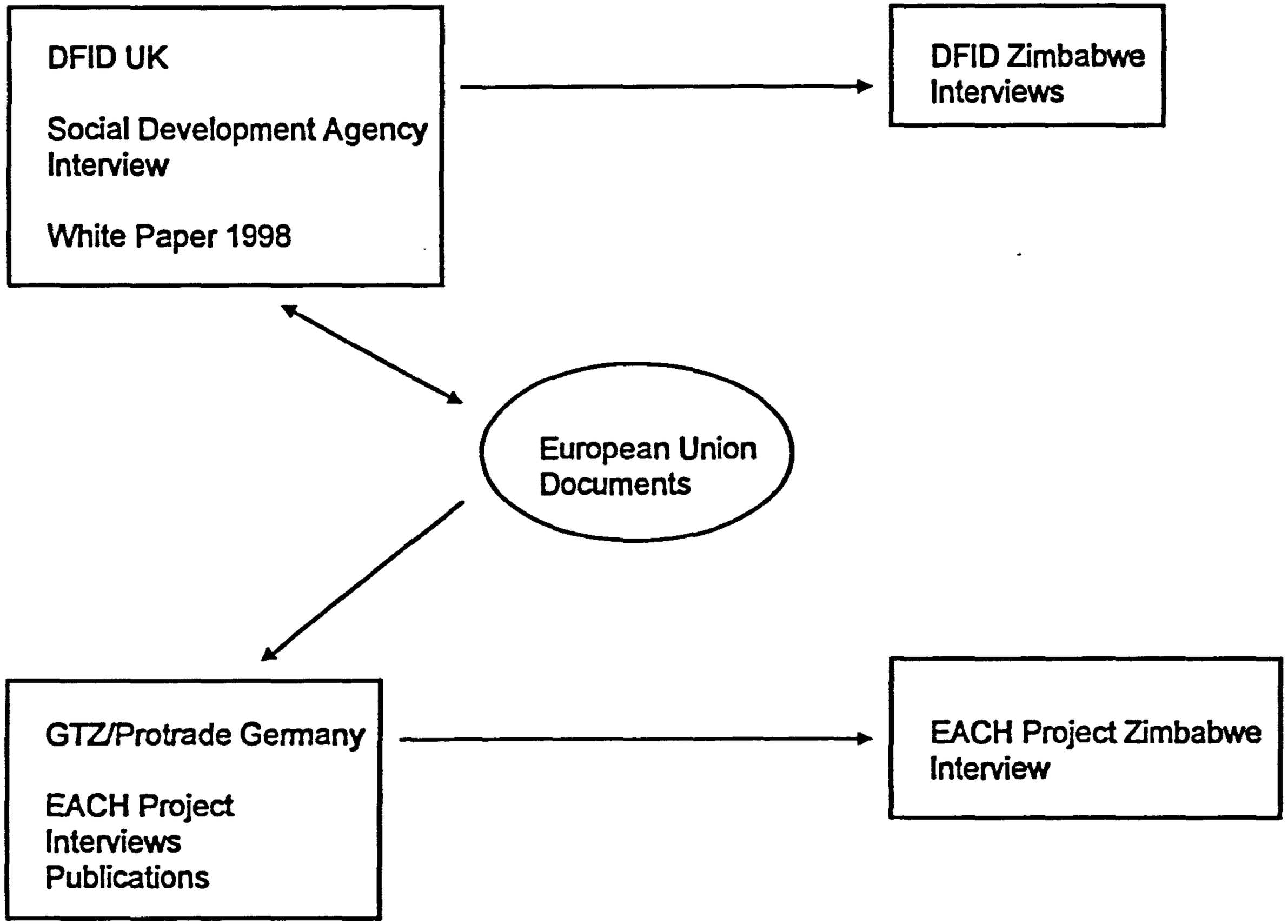

Figure 3. Governmental organisations

Department for International Development (DFID) - UK

DFID is the official UK Government development aid agency and was contacted as a governmental organisation involved in policy formulation and implementation. It is both a donor organisation, funding several NGOs, including the Intermediate Technology Development Group, and a recipient of funds from the European Union (amongst others). As a newly reorganised governmental department (changing from the Overseas Development Administration in 1997), DFID used the opportunity to present "the first comprehensive statement of development policy for over 20 years" (Overseas Development Institute, 1998). This took the form of a White Paper entitled 'Eliminating World Poverty: A Challenge for the 21st Century'. The Secretary of State for International Development, Clare Short, argues that it is necessary for the multilateral system to co-ordinate efforts to eradicate poverty. Technology is placed first by the Secretary as "one of the key defining features of globalization "(Short, 1998).

DFID claims to be mainstreaming gender issues in the organisation and consequently in its policy formulation and implementation. At the beginning of the research it was difficult to establish where technology *and* gender might 'happen'. Contact was made with the Head of Social Development Agency (male) and he agreed to be interviewed. During the interview he suggested I contact the Social Development Advisor & Field Manager (SDA, female) in Zimbabwe. Whilst in Zimbabwe the SDA arranged two informal interviews with the Private Enterprise Advisor (male) and the Assistant Engineer Advisor (female).

Gender Policy

DFID's White Paper mentions women from the beginning and women are referred to relatively consistently throughout the document suggesting a formalised commitment to mainstreaming gender policy. However, in the section dealing with macro-economic sectors; trade, agriculture and investment, women and gender are

not discussed apart from a reference to female workers in the informal sector in relation to labour standards. This indicates the pervasive quality of gender neutral macro-economic policies (see Haddad et al, 1995). The Paper states that the "Government's policy on equality between men and women..[..].. is an integral and essential part of our approach to development"(31). A "twin-track" approach is being taken to implement policy that involves both mainstreaming; "assessing and addressing inequalities between women and men, boys and girls, in relation to all strategic areas of concern", and women specific projects; "to enhance women's empowerment both in our own programmes and in our support to relevant national and multi-lateral organisations"(31). It is feasible that this policy structure might lead to a re-defining of women's position and claims in relation to men's but the Paper does maintain the status quo with regard to societal norms for women and men's economic roles (Haddad, 1995; del Rosario, 1997). To ensure its gender policy is implemented, the Head of Social-Development says that DFID has *"a number of means"(GO5/3.1)* both internal and external to the organisation: mainstreaming, Social Development Advisors, project appraisal and gender awareness training.

Mainstreaming

The organisation is following the general trend in development organisations to mainstream gender throughout all departments. DFID's Head of Social-Development says; *"..our basic policy on gender is that we should have a mainstreaming approach to it and that we should be ensuring that there is a gender focus in all of the mainstream work that we do as a development organisation"(GO5/2.1)*. This is set out in the White Paper that; *"basically says what our new gender policy framework is. We've moved from, in common with a lot of other donors now, from women in development framework which was trying to support and promote the status of women, to a policy framework that talks about gender equality. So what we're trying to do is support the move towards equality between women and men"(GO5/2.1)*. This Head of Social-Development suggests, is seen as being a; *"more progressive agenda..[...]. more radical agenda because*

the target is gender equality globally which is actually saying a lot more than saying we want to get a better deal"(GO5/2.1).

It is not clear if this more radical agenda will address the issue of equality within the household where, Sparr (1994) argues, the neo-classical economic view has been one of domestic harmony - both husband and wife benefiting equally from increased income. The Head of Social-Development suggests that putting the mainstreaming policy in practice in the organisation means that you *"don't take gender as a stream of work in its own right but you actually work it across the whole aid programme so whatever you're doing you've got to look for opportunities to advance gender equality within that framework"(GO5/2.2).* This is particularly pertinent in light of the interview with the Social Development Advisor who expressed concern with the reality of actually being able to ensure gender issues are considered in programme implementation when there is no explicit mandate to do so. Critical for promoting gender through international development is, argues Beall (1999), identifying "what gender issues are being raised where, by whom and towards what end" (also see Jackson, 1997; Weiringa, 1998).

The key is to ensure that the policy is implemented at operational level and it is here that individual commitment is crucial, as Jackson (1997) notes there can be negative as well as positive subversion in gender policy implementation. The Head of Social-Development presents a committed approach to mainstreaming gender issues across his department; *"..we have a project, a kind of policy development and operational development in this department called the Gender Equality Strategy Project (GESP). The focus now of attention is going to be on operationalising the new policy, generating guidelines, doing that and working in collaboration with other parts of the office..[...].. produce a whole series of guidance type papers that we'll push at the operational levels"(GO5/5.1).* He has however, found getting gender issues on the agenda *"...a long haul, we've been battling away on this for ten years at least, since the Nairobi conference when we actually started kind of mainstreaming approach"(GO5/6.1).* This suggests considerable subversive activity against gender policy throughout the implementation network. The conspiracy of subversion outwitting the conspiracy of implementation perhaps (see Wallis, 1997).

The essential aim of gender policy was clearly identified by the Assistant Engineer. When we discussed the responses of a number of my previous interviewees to gender policy which had gone along the lines of "yes we have the theory but we don't know how to put it into practice", she responded with surprise; *"Maybe I misunderstood it but is it not just really about empowering the women so that they can make their own decisions and so that they do have more influence over what's going on in their community?"(GO8/7.3)*. This suggests that the response from the male interviewees is one of panic, a response to the dawning realisation that women's empowerment is what its all about. At the macro-level, Beall (1999:78) argues that gender equality policy is put under considerable strain when it "suggests outcomes which are not compatible with the policy frameworks associated with neo-liberal macro-economic reform" - arguably the economic structure guiding DFID's White Paper.

Social Development Advisors (SDAs)

The acknowledgement of the relevance of gender for development has been reflected in a significant growth in the numbers of Social Development Advisors in the Social Development Division. The Head of Social-Development notes that gender is; *"...by no means our exclusive responsibility, we link with other agendas to do with participation, benefits for poor people and so forth, gender is part of that kind of framework...[..].. Its one of our major priority areas and we're trying to battle along with it..."(GO5/1.1)*. DFID use Social Development Advisors to implement the organisation's gender policy, as the Head says, SDAs are in all of the offices and implement this role through working; *"in interdisciplinary teams with sector specialists and other cross-cutting specialists like institutional development and economists to identify, design and appraise new projects"(GO5/4.1)*. According to the Head of Social Development, SDAs "*have a particular responsibility for advancing our gender policy and that happens at two levels. One is the central policy development work which we do here.. which I have just taken responsibility for and that is about developing statements and policy which we then get the Secretary of State to support. It goes in our kind of public policy statements. The*

other is then trying to develop operational guidelines of what that means in practice in terms of delivering the aid programme"(GO5/3.1). The responsibility of SDAs within the organisation's policy process involves both formulating and implementing. This responsibility extends to participating and arguably policing, the organisation's international policy dialogue. As the Head of Social-Development says, SDAs *"get involved with partner governments and non-government partners in policy dialogue and so forth. What the SDAs attempt to do is to ensure that the gender analysis is part of every identification and appraisal process and to try to ensure that there is provision within any project or other activity we do to ensure that women get an equal share of influence and benefit from these programmes"(GO5/4.1).*

The Social Development Advisor interviewed said that SDA's do *"champion"* gender issues in the organisation. She suggests that the organisation has moved forward by mainstreaming gender so every department has to respond to the issues; *"it is possible to mainstream them, that there mustn't be 'gender people', you must mainstream it. You must work on the big projects like road building and schools..[..].. as well as focusing on women's projects. Women make up just twenty percent, that 's awful isn't it? I mean fifty one percent should be benefiting women, perhaps more, but don't know, the danger of marginalising gender by having special gender.., I don't know, I think many organisations are moving away from that now aren't they? Hope they are anyway"(GO6/3.3)*. Within organisations, Baden & Goetz (1997) point to a failure to acknowledge the gendering of internal discourse and structures. This is indicated by the SDA who observes; *"....there are ways at looking at benefits of projects..[..].. you'd expect women and girls to be benefiting..[..]. you'd expect the gender balance I think. If you look at our own society we're not very good examples are we? Our organisations aren't gender balanced yet we preach this to the outside world"(GO6/4.2)*. Mainstreaming policy has had a positive effect within the organisation suggests the SDA. She has noticed an increase in gender awareness throughout the organisation and that this is changing practice; *"My personal experience within DFID is that it has changed and I haven't been working in DFID for very long either! I think that it has become more mainstreamed..[..].. people have experience that it can happen and that builds up.."(GO6/2.3).*

Difficulties for implementation - potential for "getting round" gender issues

Good intention and rhetoric are evident in DFID but still not knowing how to ensure gender policy is implemented is voiced by all three levels interviewed; Head of Socia-Development, Social Development Advisor/Manager and Assistant Engineer Advisor. The Head of Social-Development claims a commitment to understanding the deeper structures underlying gender inequality is driving the organisation's gender policy. If this is so then it offers a glimmer of hope for potential good practice and change. The Head says; *"in terms of the basic commitment you're largely pushing on open doors within the organisation. But there's still a very significant amount to do to turn those commitments into real operational practice. There is a lot of good intention around and a limit to our real knowledge about how to do it in practice. We've tried lots of things which haven't worked very well.... water projects where you have village committees and you insist fifty percent are women and stuff like that. Now you can make progress like that but often its very tokenistic and doesn't lead to fundamental changes. So we're trying to get beyond that kind of level of representation, types of equality or token types of equality and we're trying to understand the deeper structures that underlie equality and try to see how we can change. I think this whole kind of partnership agenda in the White Paper suggests that we need to engage much more directly with women in developing countries and with groups that represent them to try and ensure that they're driving the agenda much more directly"(GO5/12).*

The interview with the Social Development Advisor however, indicates that the partnership model at governmental level might result in gender issues being ignored or dismissed again because of arguments or claims of cultural difference from 'local' governments and a liberal inability to argue for change from donors. She says *"there's a push in DFID to go towards sector investment programmes where we fund central government departments..[..].. there's a lot of logic in what we're thinking, in the idea of sector investment programmes but it also does have very worrying implications, I think personally, for people like us who are concerned with making sure that the benefits don't just reach civil servants but they reach people and help ministries for example help poor people as well as people who can pay... It means we're less able to interfere...."(GO6/12.2).* There is an

understandable logic in funding sector investment programmes but the SDA has personal reservations that are well founded in the literature. Unless a gender perspective is taken from the beginning women will be invisible yet again (Hawkesworth, 1994). The implementation of policy will be further removed from the policy formulators and individuals committed to issues will have fewer opportunities to 'interfere' to ensure gender is considered. This raises the questions of whether mainstreaming gender facilitates 'getting round' if there is no individual commitment and whether mainstreaming gender allows an organisation to give token attention at a symbolic policy level to the issues? (see Beall, 1999).

Jackson (1997) argues that mainstreaming gender can result in the understanding of the issues being restricted. When asked how the organisation will ensure its gender policy is implemented the SDA responded; *"I think that's the big challenge. I'm trying to battle with it all the time.."(GO6/13.2)*. Sector advisors working in the ministries *"don't want to offend their colleagues the teachers, or their colleagues the doctors..[..].. They're saying 'well you can't, the whole spirit of sector investment programmes is that we don't...[..].. donors don't put pressure for all their own petty interests"(GO6/13.2)*. Gender, as she says *"isn't a petty interest, this is fundamental"(GO6/14.1)*. This is obviously a contentious area within the organisation and although the SDA continued to discuss the issue, she asked not to be quoted directly any further on the subject. It suggests a major opportunity for both the organisation and individuals to get round gender issues and implementing policy. There are clearly "multiple and conflicting interests" within the organisation despite the symbolic policy of gender mainstreaming (Fischer & Forester, 1993). Arguably it places the responsibility for gender at the door of the recipient ministries and 'we' can evade the issues for implementation. The committed individual in the organisation is effectively silenced as are those at the grassroots level of development.

This disparity between an organisation's policy and the reality of implementation is raised by the Assistant Engineer. There is an illusion of control (Stone, 1997) but as Hogwood & Gunn (1993) argue, for perfect policy implementation, the implementing should be carried out by a single agency and clearly this cannot happen with a donor agency working in a multilateral network. The Assistant

Engineer says DFID encourages the use of existing structures for the implementation of projects and *"that's the ideal. And then the NGO or other organisation that's implementing that particular project, they will encourage and they act as a sort of catalyst..[..].. I think that's the best way to work but it sounds so easy doesn't it when you talk about and you say 'oh yes then this happens' whereas in actual, real life that doesn't happen but that's the plan anyway"(GO8/8.3).*

DFID's gender policy sets targets for women's inclusion and as the Assistant Engineer notes; *"you have to come up with a strategy to make sure you hit that target"(GO8/7.4).* The need for hitting a target number of women can be used as a getting round it mechanism if the individual implementing the project is not committed to gender issues. Structural (and cultural) constraints are treated as immutable facts of nature (Apter & Garnsey, 1994). The "we would if we could but we can't" argument is used or "we have but cannot be responsible for women's lack of participation". For example getting the requisite number of women to attend meetings might be possible but empowering the women to participate is another matter. The Assistant Engineer experienced this during a water project meeting in a village where two women *"very slowly slunk in and when questions were actually asked of the women all the men would laugh and couldn't believe that anyone was asking the women what they thought. The women wouldn't answer because they were being laughed at and basically said ' we've never been asked a question before at a meeting, we don't know how to respond'"(GO8/6.1).*

Gender awareness training

To ensure gender policy is implemented, DFID recognises the need for gender training within the organisation and at country programme level. The continuing weakness of the gender component in project proposals received from country level is acknowledged and the organisation does appear to be attempting to block the way individuals have of getting round the issues. The Head of Social-Development says; *"every two or three years there'll be a gender training event or*

a series of workshops in each country which brings people up to date on gender planning, methods and that helps to cope with the turnover of projects and the turnover of personnel..[..].. we try to associate that, recently, with action planning new projects so they can strengthen the gender components if they're weak, which they often are"(GO5/4.2). DFID is aiming to decentralise gender training and *"use local talent instead of people from outside all the time. There are obvious benefits to that because you've got much greater knowledge and awareness of local conditions which is important. In that programme we've made an effort to include men trainers as well as women because we found some benefits in having mixed gender type teams because it makes it easier when you've got a lot of resistance, to get the message across that the issue is relevant and something can be done about it"(GO5/5.1).*

Project appraisal process

Project appraisal is another mechanism used by DFID to try to ensure gender policy is implemented at the project level. As the donor, it has the power to impose and require changes to project proposals. The SDA says that in DFID gender disaggregated information *" is one of the biggest things we push for now, gender disaggregated data with everything and that's worthwhile.."(GO6/11.1).* The Head of Social-Development says that *"The main instrument of funding NGO work is a thing called the Joint Funding Scheme which is, as the name suggest, a scheme where we cost share with NGOs on supporting their projects so its their initiatives, their projects, they own them, manage and deliver them..[..].. we don't have the capacity in house to appraise those projects because there's hundreds of them each year. So we have a network of resource centres that are under contract to provide appraisal service for JFS proposals. Proposals are reviewed for social design and gender aspects and if they're deficient or weak in those areas they may either be rejected or the NGO will be asked to have a rethink and see if they can strengthen them. So there is actually a sort of mechanism for trying to ensure that things like gender and all the social concerns are actually part of NGO thinking. I mean more often than not they are but not always to the extent we feel make the*

best opportunity"(GO5/8.2). Guaranteed implementation is impossible, as the NGO interviews have revealed there are numerous ways to get round the issues in practice. In relation to other donor organisations the Head of Social-Development thinks that *"we probably stand comparison.. pretty well on it, but that's not to say that the donor community as a whole is doing very well at it. There's a recognition that there's a tremendous amount of work still required to really get it bedded in and to really see effects. I think there's plenty of reasons to be encouraged because there have been benefits to women.."(GO5/7.2)*.

Project appraisal in practice

DFID is currently co-funding ITDG's Light Engineering project in Zimbabwe. It was clear from the information received from ITDG that the project was having problems dealing with and responding to, gender issues (as discussed in the previous chapter). DFID's Private Enterprise Advisor in Zimbabwe thought that the service centres, the main project component, were working *"very well ..[..].. it's a concept that seems to work very well"(GO7/3.1)*, which indeed for men it was. When asked if he knew anything about the difficulties the project was having addressing gender issues he replied; *"No not directly, I know that in the budget of small scale engineering there was money put in for gender expertise.... whether it happened or not I don't know yet"(GO7/3.3)*. The project is reviewed on a six monthly basis and clearly if there is no individual commitment to gender issues on the part of the appraiser, these issues will be overlooked. The mainstreaming of gender in the organisation collapses at the implementation level in this particular appraisal process. There is no Social Development Advisor explicitly looking over the Private Enterprise Advisor's shoulder and he is the communicator between donor and project implementer, the NGO.

Technology

DFID's White Paper says that it has reviewed its "support for technology development and research to assess how they contribute to the objective of

eliminating poverty..[..].. Knowledge, research and technology underpin all our work"(48). Technology itself is noticeable by it absence despite assertions to the contrary by the Secretary of State for Overseas Development (see Short, 1998). The emphasis is for research on what has worked and what has not and finding local solutions using local people and institutions in the process. Attempts are being made to address technological determinism and address the issue of women largely being excluded from technological work (for example the road construction programme)(see Cockburn, 1994; MacKenzie & Wajcman, 1994). In technology there remains a gap between intended gender policy and gender policy implementation. The intention is there, visible at the levels of formulators and implementers but putting the intended gender policy into practice is a formidable task for implementers who are not committed to the issues. The organisation has put a structure in place where it is apparently now impossible not to take gender issues into consideration. This is emphasised by the Head of Social-Development who says; *"..its quite encouraging that they're thinking along those lines because traditionally the engineers were considered to be rather stodgy old guys with spanners who didn't pay much attention to process issues or social issues but I think that would be unfair criticism of them now but it still takes a while to turn the actual interventions around. But when you get to the nitty gritty of 'lets design a road' project, they still tend to default back to what they're best at which is the technical aspects of road construction and stuff. So there's still quite a lot of dialogue going on about what it really means to turn those intentions in to real elements in projects and programmes"(GO5/7.2).*

The Head of Social-Development suggests that the fundamental battle of getting people to understand the importance of gender for development is over but getting engineers to implement policy is still problematic; *"I think that kind of phase of gender awareness and all that is well over now, people know it is a core issue. They know that its very strongly linked to poverty and they know we need to do something about it. So that fundamental battle has been won essentially. But there's still a huge challenge operationally..[..].. engineers have been looking quite hard at..., the links between infra-structure development and poverty reduction including a pretty significant amount of consideration of gender concerns. We're looking at gender in relation to water supply... and there are technology issues*

there related to women's use of water technologies. They've also been mentioning things like roads and other types of infrastructure and how benefits will be got towards women. But at the moment its very much at the level of statements of intent really. But they're very aware of the issue and want to ensure that its part of their thinking"(GO5/7.2). Engineers may be very aware and want to ensure that gender is part of their thinking but this is possibly largely to do with the fact that *"in any case they work with us at the project level of designing stuff, putting things together so Social Advisors will provide support to gendering"(GO5/7.2).* Heeks (1995) suggests that technology and social science should be brought together to ensure an awareness of the social dimension of technology and arguably this is what DFID is doing. It is also possible to argue that the involvement of Social Development Advisors allows individual engineers to waive responsibility. The male engineers are having to attempt to be open minded about gender issues before any tangible changes can be expected. This is perhaps key for the aspect of male identity, the challenge of women progressing from passive users to participation in engineering and technology. This is an issue at two levels, in the organisation and project implementation (at the time of the interview there were just two women in DFID's engineering division). The Assistant Engineer observes; *"there's not a lot of women in DFID doing engineering jobs and no women doing senior jobs. And that's been recognised by the engineering division and they are attempting I think, to just perhaps be even open minded about it. I think it's the case the world over"(GO8/4.1).*

DFID is funding an infrastructure programme and has insisted that the Western engineering consultants implementing the road building project employs women as labourers. The organisation does not however, require the consultancy to employ women engineers, as the SDA says; *"...again in the UK you don't do that do you?..[..].. all the consultants are male...[..]. No we haven't sort of said that the consultancy has to be so many women, so many men. And I suppose there is that disparity there. But at the same time you're trying to get to the poorest people, if that is your aim then female headed households are amongst the poorest"(GO8/3.2).* The project illustrates the layers of implementation structure, from organisation to Social Development Advisor to contractor to road builder, gender issues have to be acknowledged through four levels. In the implementation

process these linkages have to engage with different values (Hogwood & Gunn, 1993). The individual commitment of the SDA has the backing of the organisation's symbolic policy to impose targets to try to ensure gender policy is implemented in practice. The SDA suggests the need to be aggressive to get gender policy implemented at a practical level in the masculine area of engineering and technology; *"the contractors, their response was 'Oh we can't interfere with culture'..[after a discussion with the contractors on the similarity with safety issues]... they accepted in theory the idea that gender and equal opportunity was just the same but they couldn't put it in practice when it came down to it and now we've got to set targets and say you have to do this and that's what I've learnt from being in DFID is that actually one has to be quite prescriptive and set targets and nail these things down to rocks and become a bit of a harridan!"(GO6/Z8.2).* Women's position in relation to men's interests is having to be redefined (see del Rosario, 1997).

Extension workers are often used to implement projects and this adds another level of individuals to the implementation structure. In technology based projects the majority of extension workers are male. This is not surprising because employment as an extension worker depends on the level of education reached and basic training in the technical subject. Cultural taboos on women attending meetings with men results in the extension workers being inaccessible to women and as the Assistant Engineer says; *"if women can't actually go and ask that extension worker then there really is a problem there and that is what is happening (in an agriculture project) and we didn't come up with anything substantial that we could do apart from trying to promote female extension workers"(GO8/9.2).* Women do make good extension workers because they are less of a migrant population *"they... are more likely to stay in that district and not to be trained and then move out"(GO8/10.2).* Trying to promote women extension workers is arguably a substantial move with the potential to challenge the global stereotype of women being technologically inept.

Women's technology needs

DFID is making efforts to mainstream gender but this is still predominantly happening in the 'social' areas of development although the Assistant Engineer suggests it is having a positive effect on engineering projects. However, the design of technology is still solely in the hands of engineers, there is no suggestion of participatory design approaches. Women's needs may well be on the agenda but it is likely that these are needs as perceived by the project proposers and implementers not the women. The Assistant Engineer says; *"DFID is focusing more and more on poorest and women and I think it is coming much more to the forefront of people's minds. If you put in a large project submission it has to be to this project evaluation committee and basically all projects now, to be approved, have to have taken into account gender and said how this has been taken into account..[..].. So I do think it is changing engineering projects but I don't know that that's particularly well reflected at the moment in technology design"(GO8/4.3)*. I would suggest that this is an illustration of mainstreamed gender failing to respond to women specific needs.

When the design of technology was discussed by a male engineer both the Social Development Advisor and Assistant Engineer recognised that focusing on technology design without addressing social structures is not going to effect change for women (see Hacker, 1990). The Assistant Engineer says; *"he's more sort of into the actual design of the technology, the design of simple things like hoes and the bucket irrigation..[..].. most likely to target women. Again a lot comes into that, not just the sort of design of the product..[..].. but also the politics within the society. So I mean that's obviously important if not more so as to what actual types of technology they are using"(GO8/1.1)*. The SDA says; *"I suppose one of the things I always wonder about is to what extent, talking to you is making it clearer, to what extent we are talking about a gender problem and to what extent,..[...].. I suppose I wonder whether a hoe is a hoe is a hoe and whether you go on about women being biologically different..[..].. to what extent that's a red herring or not..[..].. Whether what we should really be thinking about is the issue of power, computers are construed because of the way gender and power relations are"(GO6/5.2)*. Gender can be a red herring and paradoxically can be used to get

round gender issues of power. There is an implied criticism of the focus on technology design rather than social structures, although as Katz (1994) suggests, issues raised by technology are interdisciplinary. However, if the design of a piece of technology limits women's access to its use then established power relations are compounded. Women are being expected to adapt themselves to technology when technology should be adapted to people (Maisonrouge, 1978).

Discussing a project for a baby friendly hospital the Social Development Advisor highlights the position of women where *"their place was to be there but invisible"*. This she suggests is what technology for women often does *"you get technology glorifying women's roles but that definitely pus them in their place in most cases"(GO6/11.1)*. Making women's needs visible *"isn't necessarily very popular because there's a big cost implication isn't there? (*in health*). I don't know how that reflects in technology, I'm sure it does"(GO6/12.1)*. I think this does happen in technology, the rationale for firstly asking women about their technology needs and secondly responding to them is purely economic. There is a recognition of the complexity of the issues, that it goes beyond figures and does have to deal with social structures and cultural norms. The Assistant Engineer implicitly refers to the challenge of addressing equality in the household when she describes a water point project where there was a target number of women that had to be involved, as she says; *"..its not just sort of, how many women you have or your water point committee anymore. Its sort of what positions do they hold and how influential are they really..[...]..its all I think at the forefront of a lot of peoples minds but its very difficult to actually monitor"(GO8/5.1)*.

The reality of why women are in the informal sector is voiced by the Social Development Advisor; *"an awful lot of our aid is directed at women in the informal sector there's always, a lot of credit programmes around the world are directed at women and that's because women are in the informal sector. That's not because the informal sector's wonderful, its because the first choice, the formal sector, goes to men so what are women left with?"(GO6/7.3)*. Being in the informal sector not only limits access to credit but limits access to production technology and institutions for technology design and development. The SDA goes on to say; *"And then we come along and say we've got to help women and we believe in free*

market and entrepreneurial spirit and everything..[..].. we have lots of people who are experts who lecture people on how to be entrepreneurial people who themselves are civil servants or work in NGOs and couldn't, in my case, be entrepreneurial if we tried! I find that particularly paradoxical that there we are telling people, its like an ideology, its new kind of mission that we go out telling people..[..].. that's how it seems to me..[...].. it does strike me that we're trying to impose an ideology, there's a big ideological aspect to this which we are promoting". This is a personal response to current development thinking and practice where business and management *"is some how seen as neutral, actually we're importing a whole lot of ideological...."(GO6/8.2).* This ideology is caught up with the idealisation of modern society which, as Slater (1996) observes, has consumption as the key to success.

The Head of Social-Development has a project list with; *"quite a significant focus on women. But very little in relation to technology transfer in development... two or three bits and pieces there in a list of what is a total number projects of nearly two hundred world-wide..[..].. very little technical transfer stuff. I'm not sure why that's the case..[..].. I suspect its because we believe that that kind of appropriate technology, although its valuable, is an area from an economist's point of view where there's less market failure than there is in accessing finance and accessing general skills..[..].. I think the kind of view that developed for us during the Eighties and Nineties was that if there was scope in those sort of areas* (technologies) *then the private sector would fill that gap basically. If people really need improved technologies there's a market for them essentially"(GO5/1).* Appropriate technology has failed development, although *"there are exceptions..[..].. there's a lot of great widget ideas out there that never have taken off.."(GO5/1).*

Market forces can be an "ally" for women argues Everts (1998), promoting user led innovation. I would suggest that the idea that the private sector will take care of the technology needs of development is a curious one and is perhaps a way of ignoring the reality of the power invested in technology ownership. Those furthest along the development road may well be able to access private sector technology and in turn be a lucrative market for investment. However, those at the bottom of the heap will not be able to achieve this (Bhalla, 1994). With no purchasing power, the private

sector will have no motivation to look to the technology needs of women. There is the argument that when women are economically independent they will be able to purchase technology from the private sector but this is a no win situation for women in the informal sector. Production technology even in its most basic form is needed to produce in some quantity whether this is for food processing, craft or agriculture etc. Technology is confirmed as being neutral (Pacey, 1983), in gender terms, ideologically and economically and this ideology informs policy.

Re-negotiating the position of technology within the patriarchal structure, away from technological and patriarchal determinism, may be the start of an underlying shift in gender relations. Ownership and access to technology means access to power and economic development at what ever level in the development process. The Social Development Advisor says; *"we know that one of the things about gender is that is constantly changing and being re-negotiated as it were. So it will change. But I think..[..].. it can change in a way that is still negative for women can't it? You know that if computers become associated with women just like primary school teaching, then it becomes devalued...[..].. that's why its quite important to always balance, I mean in practical terms"(GO6/2.4)*. Gender constantly being re-negotiated again points to the cause of male panic.

The Assistant Engineer suggests that in her experience projects implemented through women do better than with men; *"I really do believe there should be more women on these water point committees, I mean it would be fantastic because they are so much better at being honest! Keeping funds and not going down to the beer hall..[..].. they do seem to be that bit more successful in actual.. implementing what they're learning"(GO8/5.1)*. When women feel empowered they embark on changing the cultural status quo. It is possible that participation in the design of technology will provide a means of empowerment that is not initially linked to income generation. Again power through the ownership of technology. Discussing an irrigation project the Assistant Engineer says; *"..its quite interesting seeing people (*women*) getting trained up in the actual physical labour, skill of doing maintenance say on a dam or on a piece of machinery and then they can sort of talk more knowledgeably I suppose, and more authority to the men"(GO8/8.2)*. Women are developing power and control through technology and have the

potential to challenge engineering's association with innovation and the "heroic" man (Kelly et al, 1986).

International Networks

As a government department, DFID has considerable involvement with international governmental organisations and "aims to be an influence in the multilateral system to increase international commitment to poverty eradication.."(White Paper, 1998:34). The White Paper suggests that "multilateral development institutions make a unique contribution to development [because of] the influence they can exercise over the policies of partner governments"; gender equality can be addressed as a global issue by multilateral organisations because of their political neutrality and technical expertise (p34).

The Head of Social-Development suggests that through its extensive work; *"within the donor community in things like DAC, Development Assistance Committee of the OECD through our membership of the gender equality and WID expert group. We've been pretty instrumental I think, in getting the DAC to adopt a mainstreaming approach and a gender policy framework"(GO5/3.1).*

DFID works with the European Union (EU) which the Head of Social-Development said; *"passed a gender resolution in 1995 which actually did to a certain extent catch the Beijing kind of move and is a sort of gender equality commitment by the EU. There's been a review of the extent to which the resolution is being effectively implemented over the past couple of years which points to quite a number of short comings"(GO5/3.1)*. The ponderous EU policy formulating procedure is highlighted by the Private Enterprise Advisor in Zimbabwe who mentioned the EU's guidelines on gender and micro-finance; *"whether or not its doing gender and small enterprise development might be interesting to find out. That's enough of a challenge actually, finding out. I haven't seen gender and micro-finance document yet, we're still waiting for it to be produced. But its a good sign you know, because the EU takes*

its time but it gets out these guidelines eventually to everyone so its a help"(GO7/3.3).

During the British Government's six month EU presidency in 1998, DFID was able to follow up the EU review that had indicated that the gender resolution of 1995 is, according to the Head of Social-Development; *"still far away from achieving what really [it] is setting out to do..[..].. an attempt to make stronger links between gender policy and attempts to reduce poverty"(GO5/3.3).* According to the Head of Social-Development, DFID took *"the initiative..[..]. reflecting on the findings of the follow up studies for the resolution and making suggestions about where the EU might take their thinking next in order to strengthen the approach"(GO5/3.2).* This is *"just a general framework, that's what we do centrally. At the operational level we are a very de-centralised organisation so our operations are largely run from regional offices scattered around the world"(GO5/3.2).* There are clearly large number of "players" in this international policy arena (Huyer, 1998) and a crucial aspect of this is ensuring that individual players as well as organisations are 'signed up' to the general framework and committed to gender issues and policy implementation.

The efforts being made by the organisation to become more participatory reflect the acknowledgement that top-down development has generally failed. Brohman (1996) points out that it is now not only "alternative" development but mainstream strategies that are attempting to address the participatory concept. The Head of the Social-Development claims; *"We're trying to more generically develop our skill as an organisation in engaging in more genuine participation processes..[..].. sitting here in London there's only so much you can dream up in your head about what needs to be done out there..[..].. I'm hoping that within five years international development is going to look very different from what it looked like in the past. It has been very 'techi' led and very expert led and rather patronising and only moderately effective... it has made a difference I think but nothing like the extent to which we kid ourselves that it could or does...., we've got to recognise that we've got a catalytic role rather than a transformational role.."(GO5/13).* Within the network of project implementation there is supposed to be donor co-ordination. In practice however (e.g. with water projects), the Assistant Engineer says; *"..UNDP, they're supposed to be the ones who are co-ordinators..[..].. there's co-ordination to*

a certain level but its not as good as it could be..[..].. you just sort of get your contacts and then you meet up with those people every now and again and if you're co-funding a project then obviously you meet them more than if you're not...[..]. people do tend to make an effort to just keep a bit in contact with what's going on in a sector..[..].. Having said that it fails miserably sometimes but other times it works well"(GO8/11). The only time the Assistant Engineer comes across NGOs is when project proposals come into DFID; *"you go through monitoring of projects so you keep a bit in contact but again its similar to the donors in that everyone's only really got so much time haven't they? And you don't tend to keep in touch probably as much as we ought to"(GO8/11).* As Axinn & Axinn (1997) suggest, the administration of development activities is particularly complex because of the number of "dimensions" it crosses, including technology, economics, education, culture, politics etc. The structure described by the Assistant Engineer suggests a reliance by the organisations involved on commitment at an individual level to maintain contact.

FINDINGS

The implementation structure of gender policy at international and 'local' levels is clearly indicated in the DFID interviews and White Paper publication. Policy formulated at government level then has to negotiate the implementation path through the organisation's departments, with partner governments in Europe and recipient countries, civil servants, non governmental organisations, consultants and extension workers at the grassroots level. Mainstreaming gender is central to DFID's implementation structure and the organisation claims it is mainstreaming gender issues in all areas of work including policy formulation and implementation. The 1998 White Paper claims that as a bi-lateral organisation it can address gender as an issue of equality because of its political neutrality and technical expertise. The policies of partner governments can be influenced and this makes a "unique contribution to development" (White Paper, 1998:34), building towards the international implementation structure. DFID is also able to influence other European governments and undertook to do this in relation to gender and development during the British Government's six month presidency of the

European Union in 1998. A formalised commitment to mainstreaming gender issues is indicated in the White Paper although the pervasive neutrality of macro-economic policies is indicated by the limited reference to women and / or gender in the section discussing the macro-economic sectors.

As a donor organisation, DFID is in a position to influence the policy formulation and implementation of other donor organisations through membership of donor network committees (for example the OECD and EU). The organisation's explicit policy to mainstream gender informs the position it takes in its relationship within the network. As a donor DFID can also exert considerable influence over non governmental organisations demanding gender issues be addressed in project proposals. Continued influence as the project is implemented is more difficult when personal commitment on the part of the project evaluator is essential.

In practice donor co-ordination has been found wanting. Personal commitment to issues ensures that efforts are made to co-ordinate but this is not consistent. The reality of individual experience over organisational rhetoric points to the critical role the individual plays in policy implementation.

The interview with the Head of Social-Development suggests a recognition of the patriarchal approach which the organisation has taken and continues to take to policy implementation. He suggests that processes of participation are being developed within the organisation acknowledging the limitations of development as defined in the West rather than 'out there'. Paradoxically, the organisation's move towards promoting equality between men and women as a key development issue may require a less, rather than more participatory approach to policy implementation and this is tentatively acknowledged by the Social Development Advisor. Gender equality requires cultural intervention, challenging tradition at both country and household level but this in turn challenges the liberal argument of respecting cultural difference. Gender equality also challenges the neo-classical economic perspective that the household is a "harmonious unit" (Sparr, 1994:17). Whilst trying to address gender equality, the organisation is also promoting the ideology of the free market, an arguably overwhelming patriarchal structure.

The responsibility for ensuring the organisation's gender policy is implemented in all areas of its activity has been placed on the shoulders of the Social Development Advisors. This may not be intended to be an exclusive responsibility but in reality this shows signs of happening. For example SDAs are brought in to work along side engineers on road building programmes to ensure gender issues are addressed. Arguably this enables the engineers to 'sub-let' responsibility and the SDA interviewed talks of having to "become a bit of a harridan". SDAs are the 'mainstreamers' of gender and could potentially become the "gender people" in another guise.

There is undoubtedly good intention with regard to gender policy in the organisation, the Head of Division, Social Development Advisor and Assistant Engineer Advisor all remarked on a perceptible shift in commitment to the issues. There is movement away from 'symbolic' policy to try to implement seriously. A key finding is that putting the commitment into practice was proving more problematic suggesting the need for more awareness of the reality of implementation. In relation to technology, implicit gendered technological determinism is being addressed in theory, the social aspects of infra-structure development are acknowledged by engineers. In practice however, 'expert' patriarchy continues to take command over the passive user (male and female).

GTZ /Protrade European - African Co-operation for Handicrafts project (EACH)- Germany

As a bilateral and international policy actor, Germany is implementing the European-African Co-operation for Handicrafts programme (EACH). This programme was started in 1996 building on the success of similar development projects run on a bi-lateral basis by the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ -German Agency for Technical Co-operation). The project is subject to international policy through being co-funded by the European Union and implemented by Protrade, the German trade promotion division of GTZ. GTZ/Protrade suggests that the programme reflects the unified European market which has replaced national ones.

EACH is described as a pioneering project which will become a role model for the future as it offers a "new concept, incorporating combined activities throughout Europe and the selected African countries"(Schetting, 1997:3:GTZ). The countries involved to date are: Burkina Faso, Ghana, Ivory Coast, Kenya, Namibia, Tanzania and Zimbabwe. The project operates through a network of governmental organisations, private sector organisations and individuals at international, national and local levels and has been described as "an international project of inter-continental importance"(Barry, 1997:47:GTZ).

The German Federal Ministry for Economic Co-operation and Development suggests that the arts and handicrafts sector is "particularly suited to showing successful results in terms of economic and trade development" (Schetting, 1997:3:GTZ). Within the context of global development policy GTZ/Protrade aims to support the private sector through the EACH programme, promoting "new opportunities for the low-income groups, encouraging their productive potential" because economic growth is "key to removing structural causes of poverty" (Schetting). An additional aim is "to improve Africa's image in Europe "both with consumers and European handicraft importers"(Feustel, 1997:1:GTZ).

The programme's Senior Project Manager (female) agreed to take part in the research but at the time of interview was unavailable. The Junior Project Manager (female) was asked to participate and informal interviews took place with: the Junior Project Consultant (male, private sector); International Design Consultant (female) and Executive Director Craft Export, Ghana (male). An in-depth interview was carried out at a later stage with a second International Design Consultant (female) in Zimbabwe.

International and local consultants, exporters, project managers and others involved in the EACH project have written for the GTZ/Protrade publication, Arts and Crafts, EACH News 1997. References to these are indicated in the text with 'GTZ'.

Policy implementation structure

EACH is implemented through a network of organisations and individuals at international, national and local levels. The governmental organisation, GTZ/Protrade, makes connections with governmental trade promotion and export organisations in the participating countries. This is done initially through GTZ/Protrade project managers and then followed up by GTZ/Protrade international consultants who then play a pivotal role in sustaining the links. There are three types of consultant: i. marketing and product, ii. design and iii. local. The Junior Project-Consultant suggests that the project has an implicit policy to employ *"European-African people"(GO2/3)*, people with experience of living and working in both Europe and Africa. The international consultants are described by the Junior Project-Manager as GTZ/Protrade's *"information point"(GO1/3.1)*, and the importance of the consultants in the implementation process was reiterated throughout the interviews. The Junior Project-Manager describes the international consultants as; *"...mainly very experienced, they have a certain feeling how to communicate with the people in the country... You can't talk to a Zimbabwean in the same way as to Ghanaian people... its the job of the consultant to be adequate and not offend people but to convince them"(GO1/11.2).*

The Junior Project-Manager explains that the consultants have to report back on their activities with an evaluation of; *"how many people did participate in the seminars and who was it..[..].. does the situation change in the small village or doesn't it change, is it better or worse.."(GO1/3.1).* The information received is entirely dependent on the consultant's perception - what is better and what is worse is subjective depending on your point of view. This was made evident in the discrepancy between the response to the same event made by the European Junior Project-Consultant (male, private sector) and the Ghanaian Executive Director Craft Export (male). A large export market (to a German chain of department stores), for baskets woven by women had *"dropped but sustained"(GO2/2.3)* according to the Junior Project-Consultant but the Executive Director exporting the baskets said that it was very difficult and as a result of the drop in orders he had to make weavers redundant.

The flow of information regarding the implementation of the project is hierarchical, with barriers in place for both receiving and reporting. It is assumed that the international consultants will seek information they think necessary to complete their task but the project managers also make decisions about what is immediately relevant. For example, information drawn from United Nations publications by the International Design Consultant (in Germany) and presented in her reports is thought to be only of benefit to her. The Junior Project-Manager says *"we say we can't be informed on every small part of project activity"(GO1/5.2).* Later in the interview with the Junior Project-Manager it became clear that this was the official line *"...I'm always interested what everyone says, what he thinks and that we get information that we can learn from [the Senior Project Manager] perhaps sees it a little bit different because she says we can't take into consideration every piece of information"(GO1/16.3).*

EACH international consultants travel to countries and stay for two or three weeks. They look at products, product adaptation, colours, materials, production, marketing. The project tries to find qualified people in country to be employed as local consultants and according to the Junior Project-Manager, the system *"works very, very well"(GO2/1).* The project, however, may well be failing to reach it's client group and is even unclear who it's client group is. The rural producers, particularly

women, have little or no direct involvement with the 'experts' and no obvious opportunity to participate in decision making. For example their technology needs remain invisible unless the buyer notes them in relation to what he or she has been asked to supply to for European market. The Zimbabwean Designer points to a major problem with the EACH project; *"I think the programme hasn't identified who it's public is and therefore if things like seminars, you just look at everybody who's name finishes with the word 'craft', you ask them if they're interested and you cross your fingers!"(DE5/3.4).* She reveals considerable cynicism towards the projects in terms of its aims and objectives; *"its a very superficial project, that's the problem with the GTZ project, its very superficial.. because the primary aim of the project is primarily to have people on the stand"(DE5/6.2).* The Zimbabwean Designer's perception of the project is that its success is measured by the numbers of people who exhibit at trade fairs; *"all they want is people on their stand and I don't think they necessarily care about what people bring as long as they're on the stand"(DE5/6.2).* As the interview with the Junior Project-Consultant revealed the project does care about what is exhibited but for the wrong reasons - if the artefact does not follow the European trends. When asked how the project selects companies, the Zimbabwean Designer said; *"Who ever was available, who ever could afford it. Because they have to pay their own expenses when they are in Europe. Even though the stand and everything has been provided for...[..].. its very expensive. Therefore you have to be really motivated and you have to know why you are going and the companies you are working with are still trying to figure out what type of product they want to make anyway!"(DE5/6.4).*

Gender policy

The 1994 Financing Proposal for the EACH programme presented by the European Commission Directorate General VIII Development makes no specific reference to gender issues. The term 'craftsmen' is used frequently and there is an emphasis on the role of small and medium manufacturing enterprises (SMEs) but the specific problems faced by women entrepreneurs is not commented on. It may be that the EACH project slipped through the 'gender awareness' net. It was as late as

December 1995 that the EC Council presented it's decisions on equal opportunities for men and women (for 1996-2000) (a resolution to do so having been passed in December 1994). The programme for equal participation for men and women is to be "in line with the aims set out in the conclusions of the World Conference on Women in Beijing"(1995 EC Council decision).

GTZ/Protrade itself appears to have very limited gender policy in the EACH project terms although the Junior Project-Manager points to the fact that *"social welfare and the gender question and the economic situation"(GO1/1.3)*, have to be described for funding from the EU and German Government. She goes on to say; *"...I think normally GTZ when it sends proposals to a financing organisation as well give some background, why we think this project is important, why the people in the countries need this project and there's this social aspect"(GO1/2.1)*. This lack of organisational gender awareness is reflected in its publications. The GTZ/Protrade publication may present a gender neutral front but women are notable in their absence bar two passing references. The "craftsmen and their families" and "African artist and his work" (D'Hondt, 1997:GTZ; Beddu-Addo, 1997:GTZ), more accurately illustrate the androcentric approach taken by the organisation. The project undoubtedly did involve women at all levels, the Senior and Junior Project Managers were both female and a number of the international consultants are female. In a country report on Ghana, a male International Consultant was struck by the number of women owning businesses and also by the number of women involved in the traditionally male craft of wood carving (Kwami, 1997). However, it appears that the organisation does not respond to this information or follow it through into promoting gender mainstreaming or gender awareness in its organisation.

Getting round gender

The EACH project has no explicit structure for hearing women's voices. The international consultants were relied on to report back if there were any issues but the claims of gender neutrality negated the need to ask explicitly for gender

disaggregated information. This reflects the more general absence of gender policy although the Junior Project-Manager observes that there has been increased awareness; *"I'm only working for three and a half years in GTZ but I think for ten years they realised the same problems or discussions we have in our country, they are important for developing countries because they don't have to make the same mistakes we did...[..]. They're not only conceiving a project here at the table just thinking how do we want to do it and then they go to the country and they see its not realisable as we had the concept. They are learning!!"(GO1/2.4).*

The project's implementation involves a large number of individuals associated with other organisations (e.g. private enterprise and national export agencies), or working independently. The structure of the project justifies not listening to difference, it becomes an issue of individual commitment. Different countries have different needs and a project working internationally cannot take difference into account, the Junior Project-Manager suggests; *"its a normal thing that there are different perceptions because one thing is happening in Africa and the other one is happening in Europe.. and its hard job to make everything the best for everybody. So you will always find somebody who is criticising but I don't want to say that we are doing everything okay. So we still have to learn as well I think..[..].. but its a very personal thing as well, who was running the project, who's taking the decisions..."(GO1/15.1).*

The structure of the project also justifies getting round gender issues, as the Junior Project-Manager says; *"I think there you really have to say no, the overall goal of the project is this one and we can't go in every detail. We have to have a certain structure to the projects, the same for all countries and then we can look if the experts can do, can respect these details or not but we don't have the time, the money, its not manageable"(GO1/15.2).* Gender is not a "specific subject" for the project, it is not mainstreamed and so is seen as of secondary importance, to be considered by the individual consultant if they have the time and commitment; *"I think one could do more just to have these projects working hand in hand but its not manageable I think. So everyone has his specific subject he's looking at and he's looking a little bit on the right and on the left side but mainly on the centre... because if not you can't see any results I think..[..].. we don't have the*

time"(GO1/11.2), It is in structures like this that mainstreaming gender is key to the success of projects for the recipients.

Mainstreamed gender policy would go some way to ensuring that the women producers had a voice or were at least visible in the project implementation process. It is easy to see a situation where gender issues get sidelined because the 'real' issues need to be attended to first. As it is now, according to the Junior Project-Mananger, the consultants have; *"a hard time..[..].. travelling around in the country going to the companies and looking at the, that they make preparation for the next trade fair, they're looking at the follow up of the last trade fair, were the orders delivered, where's the problem, how can it be solved, what preparations have to be done and its a hard time just to, that the companies to learn to do it by themselves"(GO1/11.2)*.

The Junior Project-Manager notes that GTZ/Protrade has to *"sub-contract or to give the real work to the German private consultancy organisations"(GO1/3.3)*. In this case GFE is the consultancy co-ordinating the consultants at operational level. The Junior Management-Consultant for GFE did not answer the question about official gender policy directly but he suggested that as a number of the businesses working with the EACH project were run by women, gender was not an issue *(GO2/1)*. I subsequently contacted GFE on a number of occasions to request their gender policy which I had been told did exist on paper but nothing was forthcoming. This perception of gender being simply an issue of numbers of women was also presented by the Junior Project-Manager who said; *"the gender aspect is getting very important and we of course for the handicraft project we have no problem because lots of women are working and knitting"(GO1/2.1)*. Women's association with handicrafts make this an easy issue for the project to deal with. It is clear that the structural issues of women in handicraft and their predominance as labour for, rather than owners of businesses involved in export is not considered or even seen. The Junior Project-Manager had; *"the impression that the GTZ is getting more and more aware of the importance of the women. That they are not only the ones who are getting the lots of children but as well that they are working very hard and they are important to be included in the project and not only in the medical projects for*

reduction the number of children..[..].. in all kinds of projects they are getting more and more important(GO1/2.3).

Gender policy does seem to be absent from the consultants 'terms of reference' and from the programme generally. Although the Junior Project-Manager was sure gender was included in the 'terms of reference' given to every consultant at the start of their contract, the designers' terms make no reference to it. The consultancies and consultants are concerned with *"everything that has to so with the product"(GO1/4.3).* These are things entirely related to the product, the range, cost, export taxes, safety regulations etc., not the producer. Individual consultants do inform themselves beyond what is required by GTZ. As the Junior Project-Manager notes; *"we say if an expert is working for use he has to have all the information to do good work. So its really up to her where does she get the information. We are only looking..[..].. is he really interested or does he only want to gain some money..[..].. normally its up to the expert just to get all the information they need to realise the terms of reference we have given to them"(GO1/6.2).*

The Zimbabwean Designer answered with a decisive no when asked whether the 'terms of reference' mention gender. The Designer was equally clear that no gender disaggregated information was required in evaluation reports. This response reflects the way in which questions about gender were deflected by GTZ/Protrade EACH project interviewees and the fact that further requests for their policy on gender met with limited success. There is no long-term planning evident in the project, no evidence of sustainability and certainly no commitment to gender issues. As the Zimbabwean Designer observed; *"things that are funded by the EU, people do them in order to show that they're doing something and that's the tragedy of it...[..].. they had to show that they were doing something..[..].. it was done without any form of continuity afterwards.."(DE5/6.5).*

Design and culture

Who does the designing and where is an issue raised by the research. The EACH project strives for traditional Africa within the restrictions of European trends

indicating the trap of cultural imperialism disguised as design for development. The identity of the designer and their relative power position influence aesthetics and value placed on the artefact. Astoury (1997:37:GTZ) illustrates, perhaps unwittingly, the paradox the design of handicrafts finds itself in. He first says that "On contact with the powerful economy of the western world the delicate economy based on craftsmanship which was indigenous to Africa..[..].. were literally cannibalized" and later argues that the craft sector "represents a true economic potential..[which can] increase [the] repute of the country as an export country..". A number of the individuals writing in the 1997 GTZ publication refer to need for ethnic yet fashionable products, designed to meet the lifestyle needs of the European consumer (e.g. see Thiam; Müthing; Eiligmann; Pirie). Astoury (1997:39:GTZ) argues that products designed by European designers "must be a recognisable mirror of African identity of our day". The paradox and difficulty of trying to rationalise Westernised design and traditionalised craft is responded to by the Zimbabwean Designer who says; *"What's your concept of ethnic, Is ethnic anything that comes from Africa? Or can you have ethnic clothing of Europe but that word is never associated with Europe. So I think its a very difficult thing to answer"(DE5/5.1).* She says *"..[..]..I think once something stops having a meaning you can use it anyway you want to because you create your own meanings with that thing..[..].. and the way Africa is changing..[..].. you've got a lot of mix of cultures and ideas and perception and find somebody who probably designs African print is not African. But then are you talking about is it a question of colour, is it a question of culture, is it a question of where you were born"(DE5/4.3).* She suggests that the producers of 'ethnic' African craft are responding to Western perceptions of what is African; *"even the people who are making them (baskets), they are making them because they say its ethnic because they think its what the buyer wants. But those patterns don't have a history for them, its not an internalised thing and because it doesn't have a history they abuse it, they don't look after them"(DE5/5.2).* The global market is eroding cultural difference, and what is left of cultural difference is packaged and labelled as ethnic and traditional (see UNESCO publication with its attempt to classify craft)(Turner, 1996; du Gay, 1997).

Despite the recognition that objects have meanings (Krippendorf, 1995), artefacts are 'traditionalised' for the European markets by designers where consumers want authenticity but expect functionality too (Biggs et al, 1996). Contemporary African craft and design is not what is being promoted. African design and designers are being controlled by the European market and I think this restricts development through limiting innovation and creativity (Fay, 1996). For example the EACH project had demanded that women basket makers went back to using natural materials to meet the needs of the European markets. This was despite two facts: baskets made with synthetic fibres were selling on the local market; the natural fibres hurt the women's fingers and as the Zimbabwean Designer says; *"They found it a very laborious and painful process which they would rather avoid!"(DE5/4.1).*

Cultural imperialism is still very evident, developing countries continue to be controlled through their 'traditional' artefacts. Ethnic origin must be tangible but not pre-dominate says van Eeckhout (1997:82:GTZ); "every object must radiate genuiness and simplicity". Dependency continues through the emphasis on design and production to meet Western needs and romanticised perceptions of the historically 'simple' African. There is also the double whammy of the supposed global market. The Junior Project-Manager says; *"I think most of the products end to be sold in Europe. But there's really only production for exporting side because they still have the typical African aspect we are really looking at it but they keep their African touch(GO1/12.3).* African products have lost their function through becoming art objects for the West. The Junior Project-Manager thinks that *"at the beginning the African products have a certain function in Africa and then they (*became*) real design objects for Europeans and they lost their functional side so they were only produced for the Europeans and they couldn't be sold any more in the country because they had lost their use. For example we have a relaxing chair from Ghana..[..].. really for relaxing to feel comfortable then it (*became*) a design object and now you can't relax in this chair because it is so uncomfortable you just put it in your room and look at it, its a nice object but you can't use it. So in Africa was before it was sold quite good but now we have to re-look that its getting as well certain use for the country itself"(GO1/12.2).* There is a tentative recognition that the product should sell in the local market as well as the European. A functional

product is taken from Africa and becomes dysfunctional and then it requires a Western designer to put the function back - because it is what the Western market is now demanding, as she says; *"the people are more and more looking at the functional side because they are not just buying things to put then some where because it is looking nice but is to have a certain function"(GO1/12.2).*

The EACH project wants typical African designs but it is invariably European designers doing the designing. This is emphasised by the one 'local' Zimbabwean Designer. The Junior Project-Consultant suggested that Africans are *"emotional"* about product making but are not prepared for *"pliability"* when it came to making product changes to meet the needs of the European market. Asked if he thought the European designers were influencing the producers' home market he replied this was a *"very interesting question"* and one which he had not thought about before. He suggested that Africans are *"very flexible [*people who see *"no conflict with the traditional"(GO2/4).* This seems to contradict his earlier assertion that Africans are emotional and not pliable when it came to making product adjustments. The Junior Project-Manager argues; *"its not our job just to say to them you have your tradition but stop your tradition and become European to produce the same products that we are producing here. But I think its important for them to have possibilities to sell, to be different, to have this African image on a product. So I think it can be combined because.. the traditional things they have, they are interesting for European houses just to put at the wall but they're interesting but they don't have to be too much African!"(GO1/13.2).*

The West does not want anything too African but seeks Westernised tradition. African producers have to get to grips with the differences between European countries although the project supposedly reflects the unified European market which has replaced national ones (Graf Hardenberg, 1997:9:GTZ). The Junior Project-Manager says; *"They have to learn, a certain sensibility in the African producers on this differences in between Europe...[..].. every country has its own pictures and image and desires and trends..[..].. I think for them to get really a feeling for what is going on in Europe is quite difficult. They only have the consultants that are coming to them and telling them something"(GO1/14.1).*

Knowledge is power and African producers are disempowered - losing decision making powers over design. The imperialism of the expert is carried through to the production process where generally the production finish is considered to be very weak and the International Design Consultant in Germany says; *"you must insist that it is done because it is what the European market needs"(GO3/1.4)*, here design is about quality. She interferes with a production process, time consuming hand painting is changed to block printing to speed up production. The qualities of block printing are quite different from hand painting but the European consumer will not know the difference. Paradoxically the process of making is also marketable and there are European companies who sell products accompanied by a photograph of the handicraft being made (for example Oxfam and Traidcraft catalogues use photographs to contextualise their products). The reality is that the International Design Consultant is changing the African artefact to suit the European market and at the same time marketing it as being traditionally African, traditionally ethnic. There is a "Western veneer" placed over African reality and indigenous products (Moss, 1997).

The Zimbabwean Designer also had to follow the 'European' experts' terms. Her terms of reference were explicit in determining the products she had to design; *"Rather than say 'do six domestics', in my terms of reference I had to come up with twenty products and ten of them had to be domestic, four were toys and the remaining were gifts. And then they decided that nobody was doing toys in Zimbabwe so toys were no longer considered. But then this was a decision that was made without consulting"(DE5/1.2).* Although the international consultants are highlighted as the project's information point, the Zimbabwean Designer's experience suggests a hierarchy of expertise within the project. The Zimbabwean Designer is referred to and paid as an international consultant in recognition of her qualifications (educated in Italy), but she is implicitly seen as a Zimbabwean 'local' and her expertise largely ignored at a formulation level. Yuval-Davis's (1997:49) concept of "universalist racism" which "inferiorizes others as unmodern" is illustrated by the above and also by the EACH project's emphasis on companies having to be made aware of trends in Europe which the Zimbabwean Designer notes *"played a very important part in the terms of reference"(DE5/1.2).* She

observes; *"....this issue of trends becomes, I don't know, I think its that whole idea of control, who's controlling the project"(DE5/3.1).*

Design and development

In the EACH project the design of artefacts and aesthetics was explicitly in its remit. The project's managers explicitly understood that design was critical for the success of the project. Lamont (1997:43:GTZ) suggests that "Designing in Africa is very different to designing in other parts of the world" requiring careful study and observation of markets. Quite why it is so different is not explained, any product designing, to be successful, requires study and observation of the markets. One difference may be that the role and relevance of design is not obvious to the companies participating in the EACH project (although this is also a frequent criticism made of UK manufacturers by UK designers). The Zimbabwean Designer found; *"it was interesting working as a designer for the EACH project.. because of the way it was structured it was also very frustrating in the sense that you had a lot of companies that you didn't understand why they decided to go on the programme..[..].. they weren't making use of this design for specific reasons, they just said well they've got something nice because of EACH project was giving it to them for free!"(DE5/1.1).* She found that the project's 'terms of reference' "*did not take into consideration the needs of the companies that they were working with. I think they did not identify the companies they work with, what are their needs and therefore write the terms of reference to meet those needs"(DE5/11.2).* The emphasis on meeting the needs of the European market is key to the 'success' of the EACH project. As the Junior Project-Manager said the firms need to have; *"the willingness to, to keep in this process of designing, of looking what do they need in Europe, what trends are there and to change the products and that is not easy..."(GO1/5.1).*

From the national perspective the Zimbabwean Designer personally thinks; *"the only way design is going to develop is if it becomes a policy issue within the Ministry of Education..[..].. the problem in Zimbabwe, you've got almost none, no product designers"(DE5/7.2). "I think product design is totally non-existent, nobody*

knows a thing about it.. when people think of design they think of artists. Therefore they think of a creative but creative in a haphazard, in a haphazard way. Its not planned for... and I think that's the problem, its.... wishy washy non defined!"(DE5/7.4). Arguably the use of design is increasing the dependency on external markets (Lyon, 1991) and not responding to the need for domestic mass consumption markets before export for sustainable development (Mamdani, 1994). Two perspectives are presented by consultants writing in the 1997 GTZ publication: The export of traditional products is, argues Adjasoo, "the only way out for the resuscitation of the economy"(p30); and the success of handicrafts "could help form the basis for the creative development of African industrial products..[..].. because of their specifically African sense of form and design" (Wienholt, 1997:54:GTZ). When this issue was raised with the Junior Project-Consultant, he expressed surprise that this could even be considered. He did not think that the production and export of handicrafts could lead to mass production and industry making consumer durables in the future. He argued that Africa does not have the capabilities to develop industrially *(GO2/4.1).* The general tenor of the project reflects Renne's (1997) argument that the inter-relation between the traditional and the modern is obscured in handicraft as promoted for development and that this reinforces its association with economic marginality.

Feminising of craft

Women's economic activities are invariably positioned at the margins emphasising the feminising of craft. Additionally, in the EACH project handicraft producers are vulnerable to the vagaries of European trends. Haraway (1990) argues that becoming feminised means to be made vulnerable and this emphasises the power structures that exist between the project participants - implementers and recipients. The Zimbabwean Designer suggests that although both men and women undertake handicraft out of economic necessity, for men it is frequently a demeaning step down, a form of unemployment. Women on the other hand have never had any other option as she says; *"the reason to take up craft for men is that they've been taught to do it or its a form of unemployment, technology is almost*

zilch..[..].. So with men you've got that element of frustration that its an alternative to something else they would rather be doing. Whereas with women, women do it because its the only option they have, especially in the rural areas they don't have any other option"(DE5/4.2). The absence of technology in handicraft production emphasises the emasculation of the male producer and the natural feminine role.

The 'charitable' status of handicraft and the nature / culture dualism in handicraft design and production is reflected in the Zimbabwean Designer's observation that; *"I've noticed a lot of NGOs tend to work with women designers whereas business tends to work with men..[..].. the problem with craft designers, its difficult because I only know where one is male and the other is female but you find that men will design things like clocks and the women will design the containers for the soap! I don't know why maybe because I've never made an issue out of it but its just a strong observation"(DE5/9.2).*

Technology

The EACH project clearly focuses on a development level above that of meeting basic needs. The project is primarily directed at export firms with potential and these need to be in the formal sector to have reached the level required by the project. The Junior Project-Manager says; *"..what we are looking for is firms that have a certain potential, certain experiences in having commerce and trading in the country or perhaps already export experiences.."(GO1/5.1).* As the literature indicates the majority of small enterprises run by women are in the informal sector (for example see Mead & Liedholm, 1998). Women may be reached by the project through being the producers of the handicrafts but this is 'indirect' involvement. As the Junior Project-Manager says, the firms have to; *"have the potential really to produce large numbers of the same product in certain time to, to deliver in time at the same quality, at the demanded quantity and that's not as easy as it seems to be!"(GO1/5.1).* In order to meet these demands and the definition of handicraft to be produced by hand, the producers are the production technology. Women basket weavers in Ghana made themselves heard by demanding a higher price per basket but Junior Project-Manager notes *"they couldn't make the baskets as fast as*

this"(GO1/5.1). There was no suggestion that technology might be able to help although she says; *"product and marketing consultants when they're visiting the companies, they're looking as well at the production"(GO1/10.3)*. The project does not have the money to finance the development of production technology despite this clearly being an essential aspect of the project, the issue is simply not addressed. As Chakravarthy (1992) notes, there is a lack of technological support for women undertaking subsistence crafts in developing countries. Is this perhaps linked to the assumptions that so many of the producers are women and the disassociation of women with technology - a gendered technological determinism. Technology could offer sustainable production, using local materials (see Joshi, 1992).

There is only a limited amount of technical production change, handicraft is made with the hands and being handmade is, as the Junior Project-Consultant says; *"the unique principle difference"(GO2/3)*, with products from Asia. I argue that projects like EACH in effect discourage innovation and technological development. African enterprises are continually told that handicrafts have to be hand made (although changes are made to production processes to speed up production, decisions to do this are made by the external/European expert). The Junior Project-Consultant did cite an example where a textile company pulled out of the project because they could realise twice the price for their product on the local market and they had many orders from within the region. Technology is not the focus of the project but it demands consistent quantity and quality from exporters and consequently producers. It also demands increased quantities to meet the needs of the European market so in effect it is impacting on technology all the time. In a study of suppliers at a European Union craft fair, Biggs et al (1996) noted the need in the GTZ/Protrade EACH project for design assistance and the transfer of production technologies. I would suggest that collaboration between appropriate technology and handicraft production in this project has the potential to increase the dependency of the participating developing countries. The Junior Project-Manager says that technology is looked at by; *"the product and marketing consultants..[..]. but its not the main focus of the project. We are now looking at the possibility to include these technology parts because other GTZ projects for example..[..]. appropriate technology..[..]. we try to have a combination of the product. That they*

are working within the EACH project just to see if some of the producing companies could produce faster and better if they had other technology but its not the main focus of the project"(GO1/10.2). She hads that the impetus to talk to the 'appropriate technology' department of GTZ is; *"a need from the project evaluation itself. So we have a certain process and you realise that you could do more in this field or that field and they could need this or they could need that.."(GO1/10.4.*

It is possible to argue that on the evidence, technology continues to disempower women and its introduction to craft production would be detrimental to women. Keeping technology out of handicraft production will maintain the numbers of women employed in production and ensure their employment. In the structure of the EACH project however, ownership of the technology would be given to the exporter / business owner and not the producers. No technology visible. The Zimbabwean Designer suggests that projects like EACH, promoted by development organisations, are undertaken; *"Because its easier, it costs less. You don't have to invest any money. All you're doing is to tell people 'don't make it white, make it brown. Don't make a circle make an oblong. And I think if you really want to develop the craft industry it has to become semi-industrialised"(DE5/5.2).* Here modernisation theory is presented by a 'local' practitioner and the lack of sustainable investment in craft production is made evident. Ranis (1980) suggests that craft could provide the basis for modernised production and by applying a gender perspective to this the potential for women and technology can be seen. There has to be a move away from the stereotyping of women and the simpleness of technology (Everts, 1998). Walsh et al (1992) suggest that production enterprises need a gradual accumulation of capital and technology if they are to have any advantage. This is not something women do much of (Everts, 1998; Baud & de Bruinje, 1993).

FINDINGS

The formulation and implementation of the GTZ/Protrade EACH project suggests, for me, an uneasy feeling of implicit racism in its discourse. Cultural imperialism and patriarchy are evident not only in social structures but by the means of

production and the artefacts produced. Visual culture becomes an area of control, the image of the 'other' manipulated (Childs & Williams, 1997; Chowdry, 1995), through handicraft. The unequal partnership between developed and developing countries is emphasised by the EACH project. Global capitalism and patriarchy are both in evidence at a macro level. The association of handicraft with charity and the feminine places the developing country firmly in the submissive role. I would argue that the absence of technology and failure to address production issues further emphasises this. Cultural imperialism is perpetuated through African producers being required to respond to the 'needs' of the European market whilst at the same time receiving development aid from that same market - paradox indeed. The paradox takes on a physical form in once functional products becoming dysfunctional through being removed from Africa and then requiring Western designers to put the function back as the market dictates. Ossified tradition is used in the drive for modernity through craft production (see Bernal, 1997). As Gibson-Graham (1996:143) suggests, in the commodification of culture and the demise of authenticity, "capitalism reaches out via 'the market' into the unknown".

The manipulation of African ethnicity and culture by international consultants to meet European consumers 'needs' is typical but no less unsettling. Design, perhaps inadvertently, is used as a tool to exert power and maintain the unequal relationship between developed and developing countries. Western experts cast judgmental views over the ability of African countries to ever 'catch up' with the industrialised world yet the project does little or nothing to address the issues of modernisation and production technology. Arguably the project uses defensive routines to plough through difficult issues. For example in the case of gender, women's association with handicraft is used as evidence of it's gender awareness and justification for the lack of explicit gender policy - it is self evident that the project is gender sensitive. Equally it is believed to be self evident that Africa will never have sufficient technical capabilities to industrialise. Consequently the continued use of handicraft production for export as a tool for development is seen as justifiable and rational.

The cynicism voiced by the Zimbabwean Design Consultant, the only 'local' designer identified by the research, makes explicit this undercurrent of unease

which is also indicated by the Junior Project-Manager as she switches between organisational rhetoric and personal commitment. Acknowledging implicit racism, it is perhaps not surprising to find that the organisation has such limited gender awareness. There are international policies in place at the donor level, i.e. the European Union, that should ensure gender issues are attended to and GTZ/Protrade is itself apparently becoming more gender aware. Despite this there is a lack of organisational gender awareness and this is reflected in the publications as well as the project implementation. There is no explicit structure for women's needs etc. to be heard although one interviewee thinks there has been increased awareness of gender issues in the organisation as a whole. Awareness clearly does not necessarily result in implementation without symbolic or explicit policy in place at the top of the hierarchy. The absence of symbolic gender policy confirms the secondary level of importance the issues have. The absence also confirms the 'right' of the individual consultant to ignore or indeed fail to seek, gender issues. Not having the time is an acceptable response to any enquiries about gender issues failing to be addressed, 'real' issues have priority.

The structure of the project allows cultural difference to be used as a marketing device for increasing sales but also as an excuse for ignoring gender issues. The EACH project is implemented in a non-participatory way at all levels and this ensures that women remain largely invisible as producers, the project may in fact result in women losing control at production and marketing levels (see Lyon, 1991). The flow of information in the project is hierarchical. Individual commitment to issues such as gender is emphasised through the key position international consultants have in the implementation process, they are the synapse between the policy formulator and the policy recipients. There is an implicit policy to employ "European-African people" in this role, people (usually European) who have experienced life in both Europe and Africa. This may provide an implicit awareness of difference although the project's explicit international structure justifies ignoring difference.

Although the consultant system is considered to be working very well at the formulators end of the chain, it is unclear just who the client groups are. Rural

producers, particularly women have little or no direct contact with the 'experts'. The result is a superficial project as described by the Zimbabwean Design Consultant.

DISCUSSION

The two government organisations interviewed revealed a difference in approach to both development and gender issues (internal and external to the organisation). As government departments, both organisations are members of the European Union. Hoskyns (1999) argues that the European Union is reluctant to take on social policy, this being the responsibility of each member state to address within its own borders. Consequently "transnational" policy on gender is problematic to establish beyond the confines of equal opportunities in employment. This reluctance to address social policy issues may in part explain the tokenism that is paid to gender by GTZ/Protrade in the EACH project. Although gender has to be addressed on funding applications made to the EU, the 'gender box' ticked, the organisation can be confident that its gender policy is still situated within the nation-state. In contrast, DFID showed a commitment to mainstreaming gender and development issues at an international policy level through the UK's six month presidency of the European Union in 1998. This has to directly challenge the neutrality of social policy within the EU.

As a donor, DFID can influence the implementation of its gender policy at an international level through implementing NGOs and governmental departments of other nation-states (outside the EU). Evaluation and monitoring to ensure implementation is more difficult, relying heavily on individual commitment (as does implementation in general). Individual commitment in DFID is supported by organisational policy and vice a versa to a large degree. In GTZ/Protrade this was not so evident, individual commitment to gender issues was based on limited understanding and no explicit commitment to implement gender sensitive policy was evident from the organisation (through the project management level).

Gender policy implemented in technology orientated projects is shown to be problematic, coming up against different levels of commitment in the organisation itself, the implementing organisation (consultancy, NGO etc.) and the government of the nation-state in which the project is being implemented. There are a number of gaps for individual discretion to both implement and 'get round' the issues.

In the GTZ/Protrade project, the focus on handicraft allows the organisation to say i. "we are gender aware because women produce handicrafts" and ii. "we do not need to address technology because we are focusing on handicrafts". The Zimbabwean Designer's response to the project overall suggests the ultimate in symbolic policy. Funding by the European Union has resulted in a project that has to be seen to be implementing something. Issues of long term sustainability, gender, cultural imperialism etc. are necessarily rendered invisible in the determination to implement.

CHAPTER SEVEN

SUPRA GOVERNMENTAL ORGANISATIONS

Among the complex universe of supra governmental organisations, the United Nations is made up of more that thirty organisations, a complex network with an "interdependency of activities and goals" (Alger, 1996:335). In terms of international policy, as Axinn & Axinn (1997:233) suggest, the UN transcends the "boundaries of any particular nation state". However, although it may transcend boundaries in a physical sense, the organisation is still made up of individual nation states and there is often conflict between a nation state's desires and the 'life' of the organisation as an entity without boundaries. This is particularly pertinent in relation to gender issues, as Marien (1995) argues, patriarchy continues to persist in national settings. The increasing acknowledgement that development has failed has, Reanda (1999:49) asserts, resulted in "inter-governmental consensus on the necessity of integrating a gender perspective in all areas of international activity". This should in theory, facilitate the implementation of gender aware technology policy by the UN in areas of industrial development and trade, areas where production technology and design exist. These are also areas where men predominate and where women are easily marginalised. As Reanda (1999) goes on to note, in the highly sectorialised UN system, women, their issues and perspectives have remained a *sector*. Women's issues may be widely covered in UN conference documentation but, ask Pietilä & Vickers (1994:89) why do men resolutely fail to take up the issues, is it a fear of ridicule or accusations of opportunism "if they support an issue which, traditionally, they have steered clear of?".

The research focuses on the implementation structures of international development organisations looking for and at links in the international process for technology, development and design. The supra govermental organisations provide the global level of analysis and all the previous 'levels' relate to this.

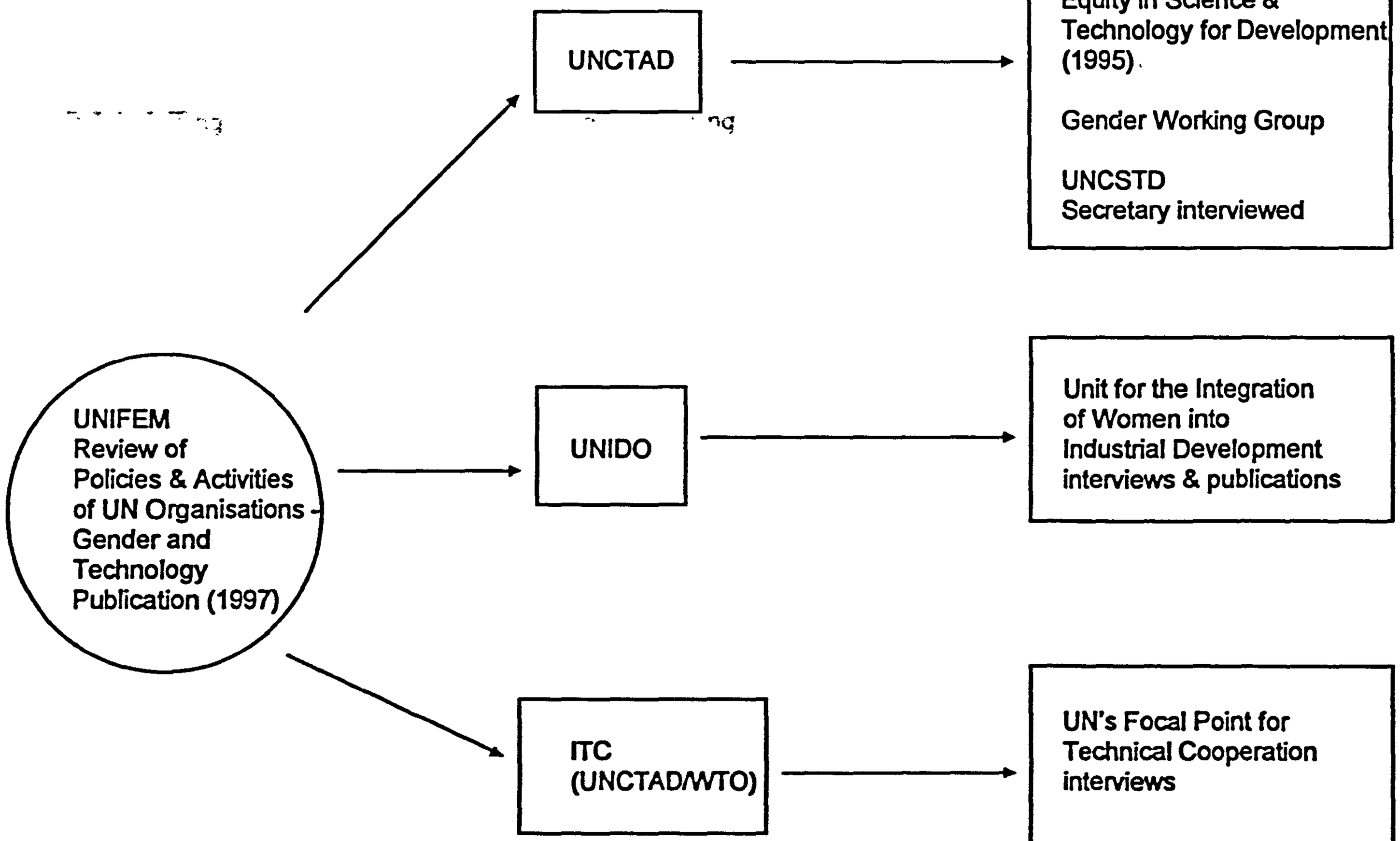

Figure 4: United Nations Organisations - interviews

Organisations interviewed

The UN organisations interviewed were: UNCTAD, UNIDO and ITC (UNCTAD/WTO), all three are involved in trade and industrial development. The importance of trade for women's development is highlighted by Pietilä & Vickers (1994:27) who argue that women have opportunities for real independence when they are involved in trade but that increasingly "more and more men are taking over trade sectors formerly controlled by women". Trade and industrial development are not traditionally associated with women yet two of these organisations had been identified by UNIFEM as promoting the issue of women and technology (see table 6): UNCTAD supporting the secretariat for the Gender Working Group of the UN Conference on Science & Technology (UNCSTD); and UNIDO's Unit for the Integration of Women into Industrial Development. ITC (UNCTAD/WTO) is identified as the UN's focal point for technical co-operation with developing countries including product development, the organisation argues that it integrates gender and technology issues where thought relevant (see figure 4).

Publications: the visible face of international policy

Publications from four UN organisations; UNIDO, UNCSTD, UNESCO and the World Bank are presented here (see table 7). Publications from UNIDO are discussed in detail in the UNIDO section (see table 12), the others are discussed in the following section.

The publications from UNIDO, UNCSTD and one from UNESCO emphasise the importance of the relationship between women and technology. The UNIDO and UNCSTD publications are devoted entirely to the issues, UNESCO devotes a section of its report. McGregor & Harding (1996) writing in UNESCO's report, highlight the international role UN organisations play with regard to women and technology. They emphasise the UN's potential to be "powerful agents of change" and note that it should "give its full support to strengthening and sustaining informal methods of inter-agency networking on gender, science and technology issues". A

second UNESCO publication, Crafts: a methodological guide to the collection of data (1990) is included in the analysis as evidence of the position of craft in development.

UNESCO World Science Report

The report is presented as two introductory papers, eleven country / regional papers, seven technical / sectoral papers and a section on gender. The emphasis is on science but the issues are pertinent to technology. A number of the country / regional papers point to the failure of existing development and science and technology (S&T) models. The papers call for both a reappraisal of and a new S&T based development model: "one is obliged to consider a different basis for a more synergistic, organic partnership" (Odhiambo, 1996:145); and a model "able to foster expanded coverage of the social rights of the population" (Cardoza & Villegas, 1996:60).

The report points to the internationalisation of consumer markets and the question that this then raises is how does this foster the social rights of a population? Paradoxically, the globalisation of S&T is resulting in new knowledge "being shrouded in secrecy" because of economically competitive markets (Hill, Turpin & Spence, 1996:179). This secrecy conflicts with the call for partnership and co-operation and denies the tacit knowledge contained within a society. This undoubtedly has a part to play in the lack of women involved in technology globally. Papon & Barré (1996:12) cite the use of patents to "gauge the level of inventiveness and creativity for industrial purposes". For women however, the patent system has rendered their achievements invisible. Historically, women technologists and scientists were frequently unable to register their work in their own name, having to use a male relative (see Stanley, 1992). Currently WIPO do not ask for gender disaggregated data. The drawback to using statistical evidence on patent applications is that the inventiveness of women and small manufacturing enterprises (for example where the cost of submitting a patent application is prohibitive), is invisible at this level (Amram, 1986).

The report itself illustrates the invisibility of gender issues in science and technology. The gender section is placed at the end of the report, women are invisible in all bar one of the country / regional papers (see India by Rajeswari, 1996). Gender is not mentioned as an issue in all seven of the technical / sectoral papers. This is perhaps surprising in papers which discuss the following: the human impact on the environment (Berger, 1996); land degradation (Verstappen, 1996); the ethics of science (Lenoir, 1996); information technology (Ferné, 1996) and others. McGregor & Harding (1996:307) argue "No data, no visibility, no visibility, no priority" and this is key to understanding why women are not mentioned in the other sections of the report. Where there is data collection, McGregor and Harding note that it is sporadic and unsystematic, this is indicative of the real attitude to women, gender and technology issues. The observation made by Malcolm (1996:322) that "...science and technology are not as good as they could be when 'other' perspectives are missing", in effect casts a shadow over the research being presented in the main body of the report. The report is evidence of the tokenism being paid to gender issues - these are women's issues not relevant to sectoral ones (see Abesamis, 1995).

UNESCO Crafts - methodological guide to the collection of data

The UNESCO guide was written as part of the 1990-1999 ten year plan of action for the development of crafts in the world. The guide aims to provide a tool for helping to preserve and encourage the crafts, the craft sectors currently having a "low social profile"(Etienne-Nugue, 1990:26). Etienne-Nugue (1990) argues that crafts have an economic and social role and ideally should be incorporated in a country's development. The value of craft needs to be reasserted and has the potential to combine the traditional with innovation and modern technology. The guide highlights an aspect of policy implementation for UN organisations, Etienne-Nugue (1990:10) saying that starting data collection on crafts "presupposes that a decision has been made at national level". She notes however, that this support is rarely forthcoming at the "highest level", minimum resources allocated if at all.

Etienne-Nugue (1990) emphasises a concern with the craft producer saying that their social, economic and political environment should be noted as part of the data collection. There is however, no suggestion of a participatory approach to collecting information. Indeed a major obstacle to accurate data highlighted by Etienne-Nugue is "a clear lack of interest in the whole undertaking" - and this is "apart from the usual distrust", shown on the part of craft producers (p37). Indicative of the approach to the craft producers is the section on complimentary equipment in which Etienne-Nugue lists "complimentary equipment... not to be forgotten" for successful for data collection: "small presents to distribute in villages to thank them for their help: sweets, pencils, pictures, cigarettes, cheap jewellery, perfume samples"(p20). This is a most surprising thing to read in a publication from an international organisation in the 1990s.

The guide makes no mention of design although it does refer to the use of museums, collections and exhibitions as sources of inspiration "which may lead to the creation of new products" (Etienne-Nugue, 1990:28). This, Etienne-Nugue suggests, can be particularly useful in helping to orient and establish training policies for craft workers and in boosting creativity (p28).

UNCTSD - Missing Links *publication*

The United Nations Commission for Science and Technology (UNCSTD) was established in 1992 and the Gender Working Group (GWG) established initially to address women and technology issues at UN conferences. The Chair of the GWG (male) proposed gender an issue relevant for UNCSTD to deal with and in his introduction to UNCSTD's 1995 publication; Missing Links: Gender Equity in Science and Technology for Development, he describes the difficulty he had convincing international delegates (51 out of 52 were male) that gender was an issue pertinent to science and technology. At the outset the GWG itself consisted of eight male delegates. To address this eight women gender and technology experts were co-opted to serve as equal members in order to 'validate' the group. The group's conclusions, recommendations and commissioned papers (written by a

number of women experts) were presented in the 1995 Missing Links publication. This this illustrates the potential of networking between organisations and individuals with specific agendas, expertise and commitment. The group aims to "persuade governments, the United Nations, the scientific community, donors and NGOs of the need for change"(pxiv).

The International Development Research Centre (IDRC) notes that what women do is "usually defined as something other than technology" (IDRC, 1995:272). Technology being equated with masculine values continues to influence the use of technology for women's development where women's "role in production does not fit neatly into existing economic models (IDRC:273)(also see Harding; Frazer-Abder & Mehta; Rathgeber and Kettel in the 1995 publication for similar observations). Harding, (1995:95) argues that "conventional androcentric assumptions have not yet been critically examined in scientific and technological (S&T) culture: in the international, national and local mediating agencies that deliver S&T development". She does however, go on to suggest that the conventional view that technology is neutral is now being challenged and that the social shaping of technology "can be joined to the new understanding of gender as a social dimension to offer valuable new resource for more effectively moving toward sustainable human development"(Harding 1995:305).

United Nations Organisations

In 1994 UNCSTD's Gender Working Group requested UNIFEM undertake a review of UN agencies' work in the area of gender, science and technology and this was followed up by an independent consultant tasked with reviewing the policies of a number of UN agencies including UNESCO, UNCTAD and UNIDO. The GWG drew six conclusions from the results including: the marginalisation of gender and technology policy to the UN's main mandate; limited collaboration between gender focal points and technology focal points within and between UN organisations and lack of gender disaggregated data. From the conclusions, the GWG made eight recommendations including: the full incorporation of gender and technology policy

across all UN organisations; guidelines for incorporating gender analysis in the design of technology policy; the incorporation of gender and technology analysis into all programmes; networking between organisations on gender and technology issues at an informal level and gender awareness training for staff of technical based agencies.

The conclusions and recommendations reflect Reanda's (1999) observations regarding the "engendering" of the United Nations system, from the "novelty" of gender analysis to the absence of communication between UN organisations. Marcelle & Jacob (1995) urge policy makers to take women's lives into account when they design technological systems and policy interventions. They point to the lag between global policy and implementation at a national level, or no implementation at all.

WORLD BANK

Marcelle & Jacob (1995:251) found that the World Bank does not have "a formal mechanism for promoting gender-specific goals within its projects". Where there is gender policy, Marcelle & Jacob note that there is "insufficient emphasis" on technology policy issues. This is reflected in both the information obtained from the World Wide Web (WWW) and the two World Bank Discussion Papers.

TechNet and GenderNet

The World Bank publishes TechNet and GenderNet on the WWW. The former was established to "accelerate the transfer of new technologies to developing countries and their adaptation to local conditions while promoting local capacity for technological development". The latter emphasises the importance of women's proactive involvement in policy processes at all levels. Although many issues are discussed on GenderNet there appears to be no connections made with the work presented on TechNet. Similarly, although TechNet presents papers from the 1997

Science and Technology for Development Symposium, Global Knowledge Conference, Toronto, none mention gender issues. In fact gender is not discussed in any of the papers available through TechNet (passing reference is made to women as traders and reducing the incidence of maternal death). Raymond & Bauer (1997:TechNet) observe that although there has been a proliferation of organisations and effort, "there are lots of nodes, but the connections [are] lacking". They fail to observe that this can also happen within the same organisation.

Oldham & McLean (1997) write about the knowledge brokering process and although Oldham was the Chair for the Gender Working Group and a key player in UNCSTD's *Missing Links* publication (1995), gender as a critical component in any technology related process is not referred to in the paper.

Discussion Papers

The two discussion papers; Africa can compete: Export opportunities and challenges for garments and home products in the European market (Biggs, Mitter, Otto & Tyler, 1996) and Technological capabilities and learning in African enterprises (Biggs, Shah & Srivastava, 1995), both fail to discuss gender as an issue despite reference to small and medium manufacturing enterprises, handicraft, tacit knowledge dissemination and the "stock of human capital" (Biggs et al, 1995). These are areas clearly identified by other UN organisations as being relevant to women (see Marien, 1995 and Reanda, 1999). Both discussion papers were published during a period when gender and gender and technology were being given considerable coverage in the World Bank and UN through its preparation for the Beijing Conference and the UNCSTD research publication, Missing Links. This is a clear indication of the lack of commitment to the issues of gender and technology, or more probably, a confirmation that technology, manufacturing and technical training are ideologically held to be gender neutral. The development of technological capabilities discussed in the 1995 paper emphasises the role of individual based knowledge and the point that an awareness of this is critical for national and international technology policy. It is difficult to see how gender can be

absent from this discourse when so much evidence exists of women's involvement and the disparity of their experience with regard to technology and manufacturing enterprises.

In the 1996 paper which looks at handicraft production for export, reference is made to technology transfer being largely about "codified knowledge". This is a critical observation for understanding why and how women find accessing technology so problematic to the point of being denied access. The uncodified knowledge is part of male knowledge and surrendering this to women is in some way to lose control of production. The fact that so many women in developing countries are involved in handicraft production is not referred to, immediately calls into question the validity of the research for use in policy formulation and successful implementation.

Design

Design is mentioned in both the discussion papers. The 1995 report focuses on three African countries; Ghana, Kenya and Zimbabwe and states that "advanced product design skills are not in evidence among the firms in the three countries" nor do technical support institutions "offer assistance in design" (Biggs et al, 1995:78). Some degree of designing does take place through copying or modifying local or foreign products. Modifications are made by firms in order to "make use of local raw materials, to suit local tastes and to differentiate their products from rivals"(Biggs et al, 1995:78)

The 1995 report suggests that an expected outcome of trade liberalisation and foreign competition was a "significant introduction of new products and product designs" but this has not happened. Claims of new products are in fact just adaptations of already existing artefacts (p78). The report asserts that the "ability to produce according to own design is an important measure of a firm's technological capabilities" (Biggs et al, 1995:136).

The report is negative in its response to attempts made by manufacturing firms to design products, for example in Zimbabwe "fundamental design was not a widespread skill". It is dismissive of adapting and copying particularly when the intention is to meet local markets' demands. I would suggest that the negative approach to adaptation and copying reveals a lack of understanding of the product design process. Completely new products happen relatively rarely and are usually as the result of new technological developments, for example the Sony Walkman and BayGen clockwork radio (and materials e.g. carbon fibre, and production processes). 'Everyday' product design largely consists of adaptation, refinement, 'tweaking' and often copying existing designs. The product's aesthetics, materials and manufacturing process (any one or combination), can be altered to present a new product to the market. Products are always undergoing change to meet the demands (real or assumed), of the local market, for example the Braun toaster in black sold well in Germany but was thought to be unsaleable in the UK until relatively recently.

In Zimbabwe the report found that at least "80 percent of the firms surveyed introduced some changes to a product's design"(p137). I would suggest that this finding can be taken as a positive indication of initiative and creativity present in the firms. A positive response to the abilities shown for even minor adaptations indicates the potential for design training and the need for design policy (see Ghose, 1995 and Pido, 1995). Product design is identified as being "crucially important for ethnic products", European consumers expecting "authentic product design plus functionality" (Biggs et al, 1996:18). Skills and creativity of ordinary people are, suggests Cooley (1986) society's most precious assets. The reports offer an important indication that design is being recognised as having an integral role in development. However, although design is clearly visible in both papers, what is not visible is how design skills are to be developed and enhanced (Southwell, 1999).

FINDINGS

The documents published by the UN organisations reflect the current realities regarding the relationship between gender, technology and development.

Discourse analysis can be used to shift the focus from these realities to the ways in which the UN construct these accounts. The publications are also the products of "self-description" (Atkinson & Coffey, 1997) and as such indicate how the UN perceives itself in relation to gender and technology and its role in the formulation of international policy. The discourse is about both policy and practice and reflects the values and espoused values of both the individual and the organisation (Forster, 1994).

The texts analysed both gender and de-gender issues, legitimating 'women's issues' in some contexts and rendering them invisible in others. Women writers (involved in some way with the UN) have highlighted both the "uncritical stance" taken in regard to technology and women (Marcelle & Jacob, 1995) and the increasing emphasis given to competition and free-trade by UN organisations regarded as "women-friendly" despite the acknowledged negative affects these have on women and development (Pietilä & Vickers, 1994).

United Nations Commission for Technology and Development (UNCTAD)

Historically, the UNIFEM review suggests, UNCTAD was "one of the pioneers in promoting the issue of women, science and technology and placing this topic on the international agenda"(UNIFEM, 1997:61). In 1979 the organisation successfully got a resolution on women, science and technology accepted at the UN conference on Science and Technology for Development and prepared a series of papers for the 1985 Women and Development conference held in Nairobi. The organisation is involved in broad policy issues and research with limited involvement in implementing programmes.

Importantly for the research, UNCTAD holds the secretariat for the United Nations Commission on Science and Technology for Development (UNCSTD) and supports the Commission's Gender Working Group (GWG) through networking, collecting and disseminating information. Despite UNCTAD's support and apparently close involvement with UNCSTD and the Gender Working Group, the UNIFEM survey (updated two years after the Missing Links publication), found that the organisation had no lists of gender, science and technology publications or projects. The organisation had carried out "comprehensive literature reviews on other aspects of technology....[and] could presumably undertake a similar literature search on women, science and technology"(UNIFEM, 1997:61). This perhaps indicates the reality of the position of gender and technology issues within the organisation. Symbolic policy exists but implementation within the organisation is not mainstream. The UNIFEM review of gender, science and technology says that UNCTAD has implicit concern with women's role in design, use and transfer of technology.

The Secretary to UNCSTD (male, Ghanaian and an engineer) was asked by the Director of UNCTAD's Division on Investment, Technology and Enterprise Development (female) to "make himself available for an interview" (in a faxed reply). The interview reflected the organisation's position of dealing with broad policy issues, remaining formal with little use of the first person by the interviewee.

Gender policy

There is a move to mainstreaming gender in the UN organisation and it's programmes and Reanda (1999) argues that fundamental changes are necessary if this is to be successful. Two points are identified by the Secretary as having an influence on the organisation's internal mainstreaming operation; within the UN, UNCTAD has a representative on the UN wide gender committee which meets once or twice a year *"every department has a representative and almost all of them are women who meet to discuss the impact of the work here on them and the programmes and activities of the UN"(UN6/10.2).* The *"UN has also embarked on recruiting women for senior posts. If you're a man you could be passed over to promote a woman. It goes up to the highest level, there is a very senior person in New York looking at all this, which posts are available and which should be given to women"(UN6/10.2).*

The policy to mainstream gender within the organisation may effect positive change at the organisational level but there are clear difficulties for implementing gender and technology policy, or mainstreaming the issues, at grassroots level. As Reanda (1999:55) notes responsibility for implementation of policy agreed at UN level "rests with the governments themselves". Social policy processes at a macro-level sustain patriarchy and capitalism (Currie & Wickramasinghe, 1997; also see Marlen, 1995) and micro level technology decisions are made in a macro environment. The inter-relationship of micro technology decisions and the macro, international environment further ensure women's needs are rendered invisible, keeping women entrepreneurs at the basic level of production. UNCSTD's Missing Links publication (1995) indicates a concern with connecting the micro with the macro to facilitate women's empowerment through technology. The Secretary says; *"we know that any technology that is transferred is a decision made most of the time at enterprise level.... But we also know that although there are small companies... micro small things, it is done in the context of macro policies of the government which maybe has to do with trade..[..].. It has to do with the international legal framework, for example intellectual property rights or copyrights.... So we look at the broader picture of what someone who needs to transfer technology will have to have in mind or will have to deal with in order to succeed"(UN6/4.2).* The organisation may

claim gender neutrality in relation to technology in its discourse, but the outcome is strongly gendered, suggesting embedded "hidden ideologies" (Danziger, 1995). There is considerable evidence that suggests women find claiming intellectual property rights, ownership etc. very difficult (Rothschild, 1981; Amram, 1986).

The organisation is involved in *"the broader policy level"* so specifics of engineering design and designing for gender variations are not explored. The continued emphasis on broad policy issues was identified by the Secretary and design is not part of that; *"To be honest with you, design as a component of technology and gender is not something that we have considered as an issue. We have only considered the broad policy implication of technology, especially the new technologies, its impact on women or developing country nationals..[..].. So we look at the broader policy issues as opposed to what you want"(UN6/4.1)*. The Secretary does offer a personal view on this *"But in terms of the policies that go into this again, I mean this is my personal view, if someone decides that there is a market for something, for women, he decides not to consult them to produce it, I think there's something wrong"(UN6/9.1)*. However, he is *"not surprised because chauvinism is like 'we know what you want, you shut up"(UN6/9.3)*. There is an indication of a personal response to the issue of women's needs and role in development *"if you want to manage ..soil and do it well..[..].. in my country it's women who do most of this work. So obviously whatever you do here you have to take them into account otherwise if you propose a policy that neglects that aspect you're not going to succeed. So these kind of things we very firmly, emphatically point out to governments"(UN6/10.1)*. Levels of frustration are indicated by the Secretary - as a male, as someone from a developing country, as an employee of a international organisation. Trying to identify where his loyalties and power lies reveals feelings of emasculation at each level.

Getting round gender issues in implementing technology policy

The staff of UNIDO's Unit for the Integration of Women into Industrial Development had experienced the gendering of technology and recognised when an organisation

uses this gendering to excuse the absence of gender awareness in its policy implementation (this is discussed in more detail later). The Unit's Officer-in-Charge says of UNCTAD that it; *"..is one of the organisations which claims that it is very difficult to have gender integrated into the (technology) programme because it's a male dominated sphere, trade.."(UN1/6.3).* As the Unit's Industrial-Development Officer then commented, this is exactly why the organisation should be dealing with gender issues *(UN2/6.3).* Paradoxically, but typically, both technological determinism and the masculine identity of technology are used by UNCTAD to rationalise the lack of gender awareness in its programme implementation.

There is no indication that the organisation seeks to find out what the women recipients think technology policy etc. means for them (equally there is no indication that men recipients are asked either). Without a gender perspective what a policy might mean for women can only be androcentric in perspective. The Secretary looks at what a project or policy might mean for women because he is required to by the organisation, not necessarily because of individual commitment, indicating a positive effect of mainstreaming gender.

Women are thought of as one of a number of guide posts, as the Secretary describes; *"I have the impact of science and technology on women as one of the posts that I look at in everything we do. What ever we are looking at..[..].. we always look at what does it mean for women. Because we consider them as one of the most under served in almost all countries including the West although they don't want to accept it"(UN6/10.3).* The language used - impact on women - firmly places women in the passive role. Women are presented as passive recipients of technology, through the needs of their husbands, according to the Secretary, when UNCTAD looks at technology's impact; *"We are looking for things that would be helpful to women or the things that would create problems...[..].. we worry about the impact of something like that on a cocoa farmer who may be has three or four wives or women working to survive in these kind of environment. These are the kinds of things when it comes to gender, science and technology, we look at"(UN6/5.2).* This is not technology for women or women having control over technology.

In an area such as technology where traditionally the visible stakeholders are men, the Secretary is sure that women's issues will be considered because the impact on women is one of the organisation's 'guide posts'. The Secretary says; *"Obviously we cannot insist they do it but usually we explain them why.. And normally you don't have problems, sometimes again you know, its run by men so they usually don't, its not by design, they don't <u>see</u> it. But if we, from the outside go in and sometimes from the outside looking in you tend to get a better feel for - and also based on our experience in other countries we can easily tell them and sometimes, most of the times, even in Muslim countries, they do accept that"(UN6/7.2)*. He suggests; *"the involvement of women in the actual policy design is also something that we encourage.. For example if the government of Ghana decides we are going to seriously look at industrialisation, high tech industrialisation..[..].. that this policy is involving, if we have to play a part we would insist that we should have a gender component in the application of this and whether it is a woman official who takes that or even some men even defend women's rights..[..].. so basically environment, the poor and women, these are the three samples that we look at when we talk about these policies"(UN6/8.3)*. There has to be a gender component in a project proposal and once again women are singled out as one of three areas that have to be considered by policy formulators. The Secretary's response suggests that Reanda's (1999:63) observation that there is "insufficient application of guidelines to integrate gender at operational level" may be evident at the macro-organisational level, but individuals are trying to apply policy in complex, national environments (see Kaplan, 1993).

When asked what response the organisation makes if it thinks a country is not dealing with women's issues the Secretary replied; *"We vigorously.. its a peer thing okay?..[...].. we encourage or we advise the governments to involve certain key people what you call stakeholders. If something is bound to seriously effect women we will make sure, or will advise the government that they should look at this dimension and maybe such an institute or NGO in your country to be asked to look at this. So that is one way to deal with it"(UN6/7.1)*. The organisation can advise and encourage as a peer but is apparently unable to institute change. UNCTAD is operating at a 'state' level although the Secretary points to the need for peer discussion with local people. This is obviously a positive move but relying on what

the organisation sees as 'women's concerns' for raising women's needs will be limited by the gender awareness of the organisation.

Individual commitment to these issues is crucial in this model of project implementation. In countries where women are invisible through cultural / social structures they will have no involvement in peer discussion and their voices will rarely be heard. Women have to deal with unequal gender relations that are further "exacerbated by Western patriarchy" (Johnson-Odim, 1997:321). Mittelman & Pasha (1997) argue that the UN approach must be integrated with or emerge from society, in terms of gender and women UNCTAD appear to be doing little to respond to this.

The organisation uses the excuse of sovereignty for not addressing gender issues. It cannot impose on countries and because of cultural differences the organisation can have no policy for implementation, just guidelines. The Secretary says; *"we have these guide posts but every situation is different and we do not have any particular set of policies we as an institution, because otherwise we'd be imposing on countries which is something that they usually resist. So we leave it open, sort of give and take and then we normally have the national counterparts..."(UN6/6.2).* The Secretary suggests that there has to be *"peer discussion with local people so we don't impose these (*gender policies*) because these days countries would resist very rigorously. If you go on and say okay this is policy, you take this or leave it. ..[..].. So we prefer to work with the countries' people within the countries and especially, I'm saying again, each time we see a role, certain activity that should be of concern to women, we make sure that that part of it is covered"(UN6/6.2).* An unwillingness to impose, to work with the countries' people is in stark contrast to the implementation method of 'conditionality', which includes 'women's policies', used by the World Bank and IMF. This perhaps hints at the superficial gestures the organisation makes to actually implement gender policy. Conditionality can be used to change macro-economic issues but issues of gender inequality are too sensitive to be addressed in the same way.

According to the Secretary, issues relating to women and technology are not explicitly written down because every country the organisation deals with has

different cultural mores. The Secretary responded to the issue of explicit, written down policy by saying emphatically; *"no, no we don't. The reason is simple we deal with governments okay? Now every country it is different.[..].. So if you are talking to Ghana it is not the same thing, if you are talking to India it is a completely different situation so there are no really hard rules as to what should be done"(UN6/5.3)*. Clearly an organisation's principles should be written down as 'symbolic policy' even though its policy advice may be based on cultural differences. However, having no explicit implementation policy can result in women's technology needs being successfully ignored. The organisation can suggest a country look at the impact on women through their guidelines. As the Secretary says; *"for example, we would say if you are planning to get into this area you may wish to look at its impact on employment, its impact on women, its impact on children and so on. But these are very broad guidelines, they are not policy specific but just guidelines...[..].. guide posts that you should use and impact on women is one of them"(UN6/5.3)*. These are, however, guidelines and not policies and as such can only be suggestions. As Hogwood & Gunn (1993) note, obstacles to implementation are external to the policy.

The Secretary referred to a 1997 UNCTAD publication; An Assault on Poverty: Basic Human Needs, Science and Technology, as evidence of the organisation's explicit concern with and awareness of, gender issues. References are made to women in the publication, however the document can be read from a gender neutral point of view with gender issues put to one side. The general approach is androcentric and certainly there are no recommendations that suggest gender issues need to be mainstreamed to ensure sustainable development despite the focus on basic human needs, environmental concerns and Sagasti's (1997:131) acknowledgement that "women do 66% of the world's work, own 10% of the land and have only 1% of the world's income" and that "[t]his is another fracture in the global order that demands urgent attention". The implicit concern for women's role in technology and development is referred to by the Secretary, rationalising their absence in sections discussing basic needs and land management; *"there is a whole thing on basic needs..[..].. for science and technology. Here also you see quite a section dealing with gender, maybe not explicitly but implicitly you see a lot of references because basic needs have water, housing, education.."(UN6/8.3)*.

Here the perception is that gender has been mainstreamed through the publication, consequently there can be no criticism of women's invisibility (see del Rosario, 1995; Beall, 1999).

It is well accepted that women have to be considered in projects dealing with family planning, public health planning etc. as the Secretary says; *"because if you involve women it means you involve the children. So you know its more than half the population if you add the children"(UN6/15.1).* It is not well accepted or considered important, where it is thought of at all, that women are important to technology and production (see Gomez, 1994; Everts, 1998). The Secretary has however, seen a change in the position of women (outside the UN); *"its rather spotty, some countries try very hard, others refuse to be bothered. And cultural values are so entrenched in some countries. I don't want to name countries but I think you know...[..].. but in some countries, I can say even in some of the African countries, there's a real, real concerted effort to involve women which is a big change"(UN6/15.2).*

FINDINGS

UNCTAD is identified within the wider UN organisation as having promoted women, science and technology issues in the international arena over a long period of time. The establishment of the Gender Working Group and the 1995 Missing Links publication support this view. However, the involvement in broad policy issues rather than implementation does allow the policy to remain symbolic within the organisation. There is little indication of steps being taken to evaluate the impact the publications have on policy at project (national and local) level. Although the organisation publishes books concerning gender issues, the interview indicates the dominance of technological determinism. This continues to be the ideology hidden behind the explicit policy (Danziger, 1995) and claims of implicit gender awareness throughout the organisation are difficult to substantiate. The publications and interview indicate an assumption about top-down bureaucratic implementation.

The publications and interview also suggest the nature / culture dualism, women's association with the reproductive rather than the productive. Women continue to be presented as having a passive role in relation to technology, it impacts on them rather than they impacting on it. The impact that technology has on women is also indirect, a result of what may happen to their husbands. All project proposals have to have a gender component but it is women who are singled out for special treatment. Issues of social structures are not addressed, these are culturally defined so therefore there can be no hard rules. Revealing the dominance of technological determinism also reveals the disparity that exists between symbolic policy and policy implementation.

Although the interviewee suggested that policy formulation was the focus of the organisation's work, attempts at broad policy implementation are made at 'state' level. The organisation can advise and encourage as a peer but cannot insist on change. There are indications of positive influence, UNCTAD encourages the involvement of women in policy formulation at government level and apparently some governments do listen. However, it is difficult to see how this can be evaluated as being more than superficial co-operation and my evidence reinforces this. This approach is the UN attempting to implement "official rules to accomplish social goals" (Stone, 1997:23) and manipulate rather than work with society (Mittelman & Pasha, 1997). Although the system is an intergovernmental network "under constant pressure from its member states" each with its own political, (internal and external), agenda (Axinn & Axinn, 1997:234), there are inevitable imbalances of power between the developed and developing.

United Nations Industrial Development Organisation (UNIDO)

UNIDO became a specialised agency in 1986 focusing on the development, transfer and use of technology from micro to macro levels. As part of UNIDO a Unit for the Integration of Women into Industrial Development was formalised the same year (the result of the work of an inter-divisional working group set up in 1979). At the time of the interviews, the Unit was part of the Human Resources, Enterprise and Private Development Division and responsible for defining UNIDO's gender policy.

As UNIFEM's 1997 review points out, although the Unit is the (informal) focal point for gender and technology, there to advise projects and programmes on gender issues, it is dependent on being asked for that advice. The Unit has no power to insist on its involvement and receives no overall picture of UNIDO's projects which involve women. This lack of power is reflected in the fact that at the time of the interview there were only two women (from an original three), "attempting to advise on work being carried out by approximately 289 professional staff"(UNIFEM, 1997:94).

The Unit's two permanent staff (the Officer-in-Charge and Industrial Development Officer, both female), were interviewed together. Both were interested in the research area and spoke openly about their experiences and views regarding UNIDO and the United Nations more generally.

Between 1994 and 1996 the Unit prepared a set of brochures presented under the collective title of Global Industrial Change: Women and Socio-Economic Progress. These brochures are discussed in tandem with the interview data presented below. As no authorship has been assigned to the brochures (with the exception of some introductory statements) the quotes have an identifying code and details of the individual titles are presented in table 12.

code	BROCHURE TITLE
WT1	Opportunities for Advancement - women and industry
WT2	Women in Manufacturing: Patterns, determinants and future trends
WT3	Women in Industry Series - Women, Industry and Entrepreneurship (1995)
WT4	Women in Industry Series - Women, Industry and Technology (1995)
WT5	Women in Industry Series - Women in the Mainstream: Integration of women in the leather, footwear and leather products industries in Africa (1995)
WT6	UNIDO Programme Concept - Thematic programme (1994)

Table 12. Global Industrial Change: Women and Socio-Economic Progress
UNIDO 1996 - Collection of brochures

Policy process - the reality for the Unit

Each organisation within the UN has a different approach to gender mainstreaming. UNIDO was unusual within the UN organisation in that it had a specific Unit with the explicit remit of working for women rather than an individual tasked with being the gender focal point in addition to more mainstream responsibilities. The Officer-in-Charge says *"There is a vast difference among the organisations how to address gender.... I found that UNIDO is one of the luckiest organisations to have still a unit (*laughs*). Because more than half of the organisations represented at the meeting (*of gender focal points*) don't have any entity as such. So taking that kind of reality into consideration you really have to see which organisation is more easy to integrate gender issues into and kind of hard-core issues like trade or like technology and industry is one of them.."(UN1/6.4)*. The meeting of all UN gender focal points is a key element of the policy process. It is undeniable evidence of the increasing visibility of women and gender issues in the organisation as a whole (see Reanda, 1999). Outside UNIDO, the position of the Unit within the organisation was seen to be tenuous, the NGO ITDG's Gender-Technology Expert described the Unit as; *"Hanging on by their finger tips... basically it wasn't a people focused organisation (*UNIDO as a whole*)..(NG1/a2.2)*. The Gender-Technology Expert suggested that the post of Chief of the Unit was considered to be *"always a very political post"(NG1/a2.2)* and at the time of the UNIDO interview the Chief had left and not been replaced.

ITDG's Gender-Technology Expert was asked to evaluate UN project proposals involving women and the implementation of participatory planning methodology. In the later case although the Gender-Technology Expert thought the method was quite good; *"it was incredibly UN in the sense that they were going about it in very ponderous ways and like many things it had gathered momentum and it was really huge and ponderous and they were going to institute it for every project and what worried me was that they hadn't got gender in it and the problem with those participative methodologies is that self critical bit about who's participating? Lets ask some basic questions about who's involved in this project in first*

place"(NG1/a7.3). The Gender-Technology Expert felt that she had *"had quite a go at them"* about the lack of gender awareness.

Essentially gender is invisible because it is associated with women and this is reflected by the position of the women within the UN organisation commissioning the Expert. UNIDO's women's Unit had not been involved with the unit instituting the participatory methodology and the Gender-Technology Expert thought that *"...in fact the Gender Unit had been quite marginalised. I was certainly concerned because I could see this whole thing taking over and being as neglectful as ever of gender issues, not only gender but issues of marginalised groups generally..."(NG1/a8.1)*. It is unclear what has happened to participation in UNIDO; *"I got the impression that it was either going to die a death or it was going to become part of the status quo in the sense that it would just be taken on board by the existing structure and used to support what they were already doing, because the vital question about who was participating was not being asked"(NG1/a8.2)*. This is an important observation on how attempts to change practice within an organisation can actually be used to support the status quo and the symbolic nature of a policy.

ITDG's Gender-Technology Expert suspected that the emphasis on the economic and neutrality of technology had got stronger in UNIDO, she says; *"they were certainly saying to me that that was their terms of reference at the time..[..].. It was about production, it was about economics, it was about large scale mass production and the issues of people were not part of the equation and that's certainly not part of the terms of reference for their job. One guy was quite blunt about it, very blunt 'it's not my concern' and he said 'if I have to introduce something that's going to put women out of work, I'll introduce it because that's my job'. It's amazing, ironic that it's happening in the UN because the UN itself is supposed to have these objectives concerned about people"(NG1/a8.3)*. Individuals working in the organisation have an official mandate to get round gender issues despite symbolic policy declaring the opposite. The same argument is used throughout all the organisations interviewed - we cannot deal with everything at the beginning and in order to achieve successful projects something has to give. That something is invariably gender or rather women's needs. Technology further

strengthens the argument because of the convenient 'truth' that it is neutral and therefore does not intentionally discriminate.

The women are allowed limited influence over project implementation, supported by the organisation's symbolic policy but are denied explicit influence over 'mainstream' organisational activities. The Unit's Industrial-Development Officer suggests that *"There are different ways of doing things. Sometimes you have to be convincing people but not only our own people within the house but also recipients, the clients. Sometimes you have to be militant about it"(UN2/7.2)*. This is despite the organisation's rhetoric that "...Its sensitivity to social and cultural constraints has led the Organization to adopt a multidimensional approach to the integration of women in industry..."(WT1:3).

The two women being interviewed were willing to talk personally from the outset. This may be because of the Unit's marginal place in the organisation as a whole. Personal commitment to the issues is essential if the Unit is to stand any chance of survival. When asked about how the Unit works within UNIDO the response from the Officer-in-Charge was; *"We try to work with others but vice versa is not always true"(UN1/5.2)*. The Industrial-Development Officer observse that until recently the Unit was not supposed to implement projects but rather had to; *"promote and develop projects and then offer them on a silver platter to other colleagues in the technical branches. So they worked very willingly with us and once we started implementing ourselves it became a little bit more difficult but then based on the previous practice it was not that difficult to continue because they know that women's projects are financed easily and they can get a lot of support from us.."(UN2/5.3)*.

Apter & Garnsey (1994) suggest that women in organisations can be effective change agents through individual action and concerted effort. The examples the Unit's staff give of where they have been able to influence gender issues: the management of a marble factory; lab technician training etc. do indicate that individuals within very large organisations can begin to influence change at the level of project implementation. Despite lack of support from within the organisation the Officer-in-Charge feels *"that's not always the whole fact because like the*

programme level I think we did achieve a lot to really integrate gender in the actual activities of... which was one of the things we achieved so far..."(UN1/7.1). However, the precarious position of the Unit indicates the pertinence of Huyer's (1998:275) observation that "Bargaining power and networking are..[..].. paramount to incorporating gender into policy".

The High Impact Programme is an example of a programme developed by a multi-sectoral team but the Industrial-Development Officer comments; *"...to be honest some colleagues are more willing and more ready and they know how to co-operate than others. I think that's normal within any big organisation"(UN2/5.5).* The Officer-in-Charge suggests; *"sustainable development for us has been always social and economy, not two tiers, it has to be together and then there are not so many organisations within the UN system who can make kind of advice on the industrial side of the gender, women in development towards social development. In that sense UNIDO can be very well situated only if people are aware of that and the people know how to address it and that's why, like this entrepreneurship development programme, we try to sort of motivate people to address in a holistic way but from the industrial, manufacturing production base as the background"(UN1/17.1).*

Getting round gender in organisation

An example of men maintaining patriarchal structures despite the organisations espoused gender policy is offered by the Officer-in-Charge who describes the situation of two conferences discussing sustainable development happening at the same time. One organised by the IMF and World Bank attended by *"all those ministers, ministry of finance, ministry of industry, ministry of planning those, those high level people"* and the other the European Region preparatory conference for Beijing attended by the *"ministry of health, ministry of whatever, social development, ministry of women"(UN1/16.2).* The Officer highlights this contradiction and the reality of power structures; *"at one point one lady took the mike 'by the way do you know that there is IMF-World Bank meeting going on today*

- where are our ministers of finance because they are the ones who have to decide actually how to distribute the resources to the development agenda and they are not here'"(UN1/16.2). Women may have recognised the importance of "voicing women's perspectives" at all conferences (Alter Chen, 1996), but patriarchal structures are still adept at 'getting round' the issues. Alter Chen's claim that the UN Decade for Women has facilitated women's access and "a place at the policy-making table" is not born out by the evidence of the UNIDO interview. The Officer-in-Charge argues; *"more important for women, from my experience... is that women should be able to tell, that they can really claim that they know what is needed and what they can do"(UN1/4).* Empowering women who are at the receiving end of development is recognised as essential by an individual who has direct involvement with policy implementation. This recognition is critical for the success of development but as Moser (1995) argues, the empowerment of women challenges the status quo.

Mainstreaming gender

UNIDO states that it mainstreams gender in the development process "recognizing women as full and equal partners"(WT41). The organisation also stresses the need for women specific programmes, these being necessary "to remove the obstacles impeding women from participating fully in the mainstream of development"(WT4:1). Talking about mainstreaming women and gender issues may change approaches etc., as the Industrial-Development Officer says; *"at the programme, project level, through this kind of participation (*e.g. High Impact Programme*) in other departments, divisions, branches.. But I just cannot say whether this is across the organisation. I don't think so unfortunately because as I said, there's no sort of official stand of UNIDO policy, gender <u>and</u> technology, that's not done..[..].. there is a database here in house and it's very hard to find something to do with gender, almost non existent.. there are some kind of questionnaires regularly sent out to the clients and institutions all over the world... if you really don't <u>request</u> any kind of information on gender and technology then nothing is coming in!"(UN2/5.5).* The failure to ask for gender disaggregated

information from clients is, suggests that Industrial-Development Officer, an indication of the; *"very deep rooted"* problem in the organisation although at *"the very operational level some of the people really do understand and see..[..].. and some of the programmes actually without our involvement doing gender mainstreaming..(UN2/6.1)*. As Stone, (1997:68) says counting for constructing explicit stories also creates implicit stories, things only get measured when "we want to change them". Arguably things can also only be counted for symbolic reasons, when an organisation wants to be seen to be addressing issues, getting round the 'getting round' gender. The rhetoric of visible impact of gender policy can be measured against individual experience, reality. In it's publications, UNIDO claims that "Through the integration of a gender perspective into all UNIDO programmes and services, a visible impact has been achieved"(WT1:7).

Short termism

According to Prügel (1996), there is disagreement in the UN regarding mainstreaming versus women specific programmes. The Industrial-Development Officer also highlights the role short-termism and donor trends play in establishing sustainable strategies (see Powell & Seddon, 1997; Wallace, 1997). She says; *"The more sustainable strategy for this if the ultimate aim is to have women playing an important role in the socio-economic development of the country, you cannot play with words from one year to the other and this goes for science and technology..[..].. it goes for everything, maybe I shouldn't use this word but in a way this is my personal criticism of the donor world, that they change from one year to the other something, and if you want to do this you have to set a strategy and a strategy for such an important thing, discrimination is the result of years and years and years of experience and you cannot change it from one year to the other. So you have to have a very long term strategy for this. So this is why in science and technology or anything else, we follow both mainstreaming and women specific programmes according to the need and the context"(UN2/9.3)*. The Officer-In-Chief argues that there is a case for women only programmes because women have been discriminated against for so long that they are still far from achieving equal

status with men; *"in many spheres of development... particularly with this access problem, chances, even the proportion of chances which is available to women is not the same as for men...[...].. I think this is a very kind of, very strategic move even if some donors like (UN2) says, criticise this 'why you are still targeting women only?' because it is necessary still..[..].. You cannot simply say this is open to everyone and particularly technology..."(UN1/10.1)*. In this instance donors refers to the international governments that fund the UN.

Gendering technology

Organisations use the claimed neutrality of technology to 'get round' gender issues whilst at the same time acknowledging that it is a male dominated sphere. There is the paradoxical nature of the discourse. However, the control of technology by men "is neither a divine dictum or an environmental imperative" as Stanley (1992:194) argues. The Officer-in-Charge suggests that part of the denial of access to technology for women comes from the assertion that technology is neutral. In practice she has found; *"its a fact that technology is not neutral at all, gender neutral not at all. Technology as such yes, equipment like this bolt is gender neutral maybe but it has to be used by somebody right?.... we have to see who is going to use it or who can use it, it is not gender neutral. That's what I think, on our project experience"(UN1/10.2)*. The Officer-in-Charge suggests that industry is ignored by development organisations because of the argument that it can best be dealt with through the private sector but her concern is that the least developed countries have no capacity to absorb private sector assistance in the first place. She asserts that it is here that an organisation like UNIDO has a role to play; *"but of course some countries don't want to see it like that way and unfortunately those countries are major donors! (*financing the UN*)"(UN1/17.4)*. The push for economic success justifies the exclusion of women and offers a way of 'getting around' gender issues. The Industrial-Development Officer says; *"in the recent years there's been a lot of emphasis on the social aspects of development like health, like agriculture, like education but if you look at for instance the backward and forward linkages in agriculture, all the inputs to agriculture come from industry..[..].. Every thing comes*

from industry and people always try to turn a blind eye to that..[..].. everything needs industry and I think the whole development aid world is doing a big mistake.."(UN2/17.2). Women's clear responsibility for the social aspects of development and apparent lack of involvement with technology may in part explain why industry is rarely if ever associated with health and agriculture. The association of women with health and agriculture ensures that these areas are in the nature 'bin' of the nature / culture dualism (see Gibson-Graham, 1996).

Getting round the 'getting round'

Men always have ways of getting round women's technology needs. The organisation is responding to this by getting men to see how they can benefit from women's involvement in production and industry but there is no mention of empowering women. There may be the thought that this is a subversive way of ensuring women's empowerment through gradual economic independence - doing it without men noticing its happening. In the example of establishing loans, the Industrial-Development Officer says; *"If they (men) don't want to do it there are so many ways to get round it...[..].. So its the whole process of just changing that cultural attitude and perspective and all that, by helping these women to do these there'll be more time saved and this woman will be more available for me, for my children or do something else. If they can just see that link they might not be that reluctant"(UN7/8.3).* In the publication discussing the integration of women into mainstream industry, tradition and culture are highlighted as major issues in the implementation of gender and technology policy; "Most managers spoke of the importance of traditional African cultural gender roles..[and that]... the failure to indulge it..[..].. would plunge the African social set-up, especially the family unit, into chaos."(WT5:8). This adds another level of difficulty to the issue of mainstreaming gender. As a symbolic policy, the organisation may eventually implement mainstreamed gender policy within its structure but implementing the policy 'outside' inevitably comes up against charges of colonialism and imperialism. Paradoxically, the African managers who use traditional cultural gender roles to

limit women's participation in industry are propping up universalist racism, which Yuval-Davis (1997:49), argues "inferiorizes others as unmodern or premodern".

The publication discussing women as entrepreneurs for industrial growth highlights a number of problematic areas and these are reiterated in later publications. In small-scale industries women are confined to the "traditional branches of industry..[..].. engage[d] in activities based on customary skills"; not surprisingly low cost and low technology equipment predominates and when training in upgraded technology is provided "only little thought is given to the participation of women"(WT6:1/2). The Officer-in-Charge suggests that there are always ways of "getting round" tradition and male insistence; *"if there's something that really goes against women there is always a way out and then it's not really nice to say that women cannot do this or go here or there because of this restrictions and particularly if it is going to be that real technological access...[..].. it's a will on the both sides to find out the way out and then sometimes militant but sometimes really going between the cultures, the net, so that they can without violating tradition.."(UN1/8.1)*.

The Industrial-Development Officer says it is important to take the initiative with regard to empowering women; *"to convince people who do that, sometimes nicely, sometimes more militantly but there are ways of doing that"(UN2/7.2)*. The Unit's women have found ways of getting round the 'getting round' to ensure women's technology needs are heard (Wallis, 1997). Access for women is seen as a problem in all areas, for instance credit as well as science and technology. The Officer-in-Charge suggests that organisations like the UN can impose at a national level and insist national governments and/or organisations change their attitude to women's access or a programme will be withdrawn *(UN1/9.2)*. However, the theory of imposing can be very different from the results in practice. As the Officer-in-Charge says; "*we try to really involve women particularly in the food processing, agricultural related products, they are the ones who use it so we are sort of imposing in a way (on) the counterpart NGOs, the counterpart government or institutions to make a thorough needs assessment on women as users...[..]. But it's sometimes very difficult because users are women, that's for sure, everybody knows. But.. . as destiny of the UN organisations, we have to go through the*

government institutions, not always but most of the times and then the governmental institutions do not always have the real in-field experience or practical knowledge of the people...[..].. So sometimes the project really impose on them that yes this has to be designed in co-operation with the women actual as end user but I don't know if that is always happening and that is kind of problem in a way"(UN1/14.3). On the one hand the Officer-in-Charge is confident that the organisation can impose, as a donor, to ensure that women as users are considered but as the thoughts progress there is acknowledgement that this often does not happen - the UN not having direct hands on involvement at the grassroots level. The organisation might argue that it has a strategy for getting women's needs heard but in reality there are always ways of getting round it at the implementation level.

Women marginalising technology

Another example of 'getting round' the gender issues of technology is, paradoxically, presented by women themselves. Arguably this can also be seen as women colluding with patriarchy, a trade off in order to achieve status. Women dealing with gender / women's issues are able to use the supposed neutrality of technology to get round gender issues associated with technology and industry. There is a limited perception of what women can deal with technically. It is also giving men and women working with technology and development leverage to further ignore, or get round women's technology needs. Women's issues are limited to the personal and domestic, the natural environment for women and the feminine. Meanwhile men and the masculine get on with the important business of maintaining power and patriarchal structures. The Officer-in-Charge attended the Beijing Conference and felt that UNIDO was marginalised; *"I felt that the organisation like UNIDO was sort of marginalised in a way because our subject issues like industry, like pure economic and hard core financial development are not at all taken into consideration.. Yes okay violence against women, kidnapping women and human rights, those are very important of course but at the same time you simply cannot talk about having human rights for women without having any*

income"(UN1/16.2). This reaction to UNIDO is another illustration of the perception that technology is gender neutral. Technology is marginalised by women's issues and women's issues are marginalised by technology. As the Officer-in-Charge says; *"but what about production, technology acquirement and then needs of women really advance into consideration within the scope of economic development. And that for us was a little bit alarming...."(UN1/16.2)*. Women may actually fear rejection in this policy area. A 1995 UNIDO publication argues that global industrial change "...has significant gender implications in the way it affects productive systems, labour markets and macro-economic policies... Understanding the structural relations of gender, industrial production and economic growth are therefore crucial"(WT2:4) for both sustainable industrial development and the improvement of women's socio-economic position.

There is an urgency to start thinking of women as productive and active rather than reproductive and passive and UNIDO has the explicit policy to do so. The organisation states that "...women's participation in paid manufacturing tends to improve their social and educational position.."*(WT2:24)*. The Industrial-Development-Officer suggests; *"..if you want to empower women, you can look at them as producers"(UN2/2.3)*. There is a strong feeling that the organisations and women's groups dealing with women's issues are at fault for ignoring industry and manufacturing, that they are indeed playing into the hands of the existing power structures and hindering sustainable development for women. As the Industrial-Development Officer says; *"look at the employment that industry is creating. This way or that way but that is also to be dealt with, I mean there's a lot of criticism of export processing zones but it has to be dealt with, it's a fact and you cannot improve it by putting it aside, you cannot deal with the problem. And certainly if you're talking about globalisation and so on, these things have to be looked in to, not pushed aside"(UN2/18.2)*. This reflects Haraway's (1990) assertion that the integration of workers, industry and markets has reached a new scale, where women are in this is crucial for their empowerment (also see Enloe, 1989). The organisation has good practice policy certainly at a symbolic level to address the issues. Arguably, there is also evidence of good practice conspiracy to implement the policy.

Unfortunately, the current reality is that the Unit no longer exists and responsibility for ensuring women's visibility has been dispersed under the guise of mainstreaming, potentially ensuring invisibility. Problems with mainstreaming gender in the UN highlighted by Reanda (1999), the male sectorial response to women's issues, mirror Enloe's (1989) observation that making women visible in industry challenges the status quo regarding women as reproducers and consumers. According to Enloe (1989:176), this requires men to "revise their own ways of confronting the challenges of the next decade".

Good practice - implementation

Particularly significant for women in developing countries suggests Rowbotham (1997), is their all too common exclusion from technology control and access to modern technology. This is not an abstract issue for women but one of practical relevance. The Industrial-Development Officer described a programme in Vietnam which facilitated women's access to technology in the food processing sub-sector but which is a model that could be copied in other areas of production. The project involved two different institutions, one involved in food technology research and the other which researches and develops appropriate technology for small enterprises. Women participating in the programme were taken to both and also made aware of technology available through seeing equipment laid out. She says; *"But we were very careful in selecting the equipment, that is affordable by the women but at the same time going a little bit away from the very, very basic and traditional technologies that they use because what they use is sometimes not hygienic, cannot produce hygienic, high quality products. So without going too much on the high tech side we acquired the equipment that was necessary so when they come and see that equipment there they get very much interested in the programme"(UN2/3.1.* Women are being offered technology choice and respect as producers.

Educating and training women to utilise technology and be innovative must involve accessing political and economic networks (Mitter, 1994). Identifying the

importance of knowledge and training, Benston (1992) argues that women have been excluded from an understanding of technique which in turn excludes them from creating technological innovations. The Unit was developing a High Impact Programme which proposed an integrated approach to women and technology and an integrated strategy to get women's needs heard. The Officer-in-Charge said *"these papers are really talking about the systematic framework for women to acquire or to get access to technological options. So using technology or acquiring, learning technology is one thing but in order to do that and in order to really use it for making products and then selling it, it's just one stream of everything..[..].. It used to be something like only food processing and the technological training and so on, based on my experiences it's really not enough"(UN1/2.3)*. A case study discussed by UNIDO raises the problems of trying to go beyond the "not enough"; in Bolivia an attempt was made to start a pottery for women "but this meant changing the division of labour in the village which proved to be impossible in light of its deep social and cultural roots"(WT3:2), emphasising the need to respect local traditions to be successful in enhancing the role of women.

Women's roles are identified as being most significant in small and medium-scale industries (WT3:1). The UNIDO publications use the word industry which emphasises women's role in mainstream economic structures in a way that the word 'enterprise', more commonly used by development organisations, does not. These small and medium industries can and do play a critical part in a country's development but when owned by women, their technology requirements are frequently overlooked (WT2:3). The level at which women are involved in production and production technology is confirmed by the Officer-in-Charge; *"there are various kinds of technologies and most of the cases what we are thinking in this Unit as such is really <u>appropriate</u> technology not necessarily high sophisticated technology but really any kind of production, manufacturing technology adapted to the women, and of course when women come in most of the women's activities really not in that kind of advanced stage"(UN1/1.2)*.

The Industrial Development Officer says that the High Impact Programme works on the premise; *"that we deal with existing women entrepreneurs with potential for growth, we are trying to go outside the limits of income generation, grassroots*

activities and try to push women in to industrial production and to make them more visible as the high impact programme title says, more visible and more meaningful contribution to industrial development"(UN2/1.4). The Unit acknowledges that technology is key to this, as Industrial Development Officer says; *"what we are trying to do is to give the necessary push to the women so that they acquire the technology not at the grassroots level although we try to keep in mind what they are used to, the traditional technologies and so on, but also to open them the doors of a bit higher level technology"(UN2/2.1).* This again presents a challenge to the current position of women in industry, moving beyond the informal sector or 'nimble fingered' employees in export processing zones. Arguably it challenges patriarchy at all levels, internal and external to the organisation.

Design

Design is "nested" in the organisation's technology policy (Rein & Schön, 1993), recognised as necessary for the advancement of women's enterprises in a limited way. Of the ten case studies presented in the two publications on women as entrepreneurs in industry (WT3:2), and women, industry and technology (WT4), four briefly refer to the importance of design (pottery in Bolivia; textiles in Kenya; plastics in Viet Nam and the leather industry in Africa generally). In one study, new product designs were found to sell for a higher price than traditional artefacts, all four studies comment on women's inadequate design skills. No comment, however, is made in any of the publications on how the lack of design skills are to be addressed.

The Industrial-Development Officer recognises the need for design, suggesting that design is necessary to upgrade enterprises from the informal to formal sector; *"...maybe you want to upgrade them to the formal sector.... push them to export and to be able to export you have to have good design and not only design, design goes hand in hand with diversification so we use designers and we also use people who can teach product diversification"(UN2/14.4).* Garment related projects were the one area that the interviewee could identify as using designers and the quote

suggests a limited understanding of what design can offer. Design may be recognised as part of the "nest" of policies but it has not been positively addressed.

International networks

At the NGO level the Unit has links through UNIDO projects and NGOs' accredited to UNIDO. They run workshops through the International Federation of Business and Professional Women (IFPBW) and Soroptimist International has tried to collaborate but again the lack of staffing and innumerable claims on their time has curtailed any collaborative projects. The Unit made links with the Once and Future Action Network at the Fourth World Conference on Women held in Beijing, 1995/6. However, perhaps too much practical and emotional energy is needed to keep the Unit functioning within the larger organisation for the two individual women to keep in touch with networks. As the Officer-in-Charge says, *"well as far a OFAN is concerned after the Beijing conference for the time being up until now we havon't done very much, very much means we are keeping in touch because OFAN has been trying to strategise the future activities and so on but we didn't really participate in their activities since Beijing."(UN1/12.2)*. OFAN, Huyer (1998:282) suggests, has also suffered from what she refers to as "post-Beijing fatigue". Sustaining enthusiasm and motivation is difficult in the face of such painfully slow reform (Reanda, 1999).

The Unit works with NGOs at a practical level, not at the policy or strategic level, as the Industrial-Development-Officer notes; *"...we are working with NGOs in general but not so much on the strategy or policy level, but mainly on technical co-operation"(UN2/13.2)*. The NGO, ITDG has influenced the Unit at a practical level, or at least an individual expert has influenced two individuals in UNIDO who were willing to listen. As Gordenker & Weiss (1995) suggest, the relationship between NGOs and the UN can range between the distant and indirect to virtual equality, in ITDG's case it has influence as an expert.

FINDINGS

Consideration of gender issues at project implementation level may influence the policy of the organisation eventually although the organisation itself has a 'getting around' gender issues strategy through not asking for gender disaggregated information. The two women interviewed revealed intense personal commitment to the issues of women and industry. There is evidence in the interview that the women within the organisation were permitted to influence practice and project implementation in terms of gender issues but not the organisation's rhetoric. However, since the interviews, the Unit has been disbanded, subsumed into the main structure of the organisation. Commitment and some visible if limited signs of success in project implementation were not enough to ensure the Unit's survival. Although the women had found ways of getting around the 'getting round', a strong policy network of peers within the organisation, conspiratorial or open (Wallis, 1997), did not exist for the women. The patriarchal structure of the organisation has been maintained despite the espoused gender policy.

The interview raised the issue of the role of industry in development. Development organisations are thought to ignore industry, using the argument that the private sector will fill the gap. Ignoring industry is a "big mistake", the development world failing to appreciate the intrinsic role industry plays in all areas. This perhaps exemplifies the conflict between the social and economic parameters of development. Both women were clearly exasperated by the lack of awareness or perhaps unwillingness of development organisations to address the issues of industry for women's development.

Design was clearly identified by the Industrial-Development Officer as necessary for the development of manufacturing enterprises, assisting the process of moving from the informal to formal sector. A UNIDO publication noted that new designs could sell for a higher price than the traditional ones. However, the lack of understanding of what the design process actually is, is revealed by the absence of any comment on how women's lack of design skills can be addressed. Design exists as a vague, generalised component of the organisation's development policy.

There is agreement from the Unit's two women that a long term strategy is needed to ensure that women's technology needs are heard and importantly that women have access to technology. Galli (1992) suggests that social change coincides with technological change. For women this may not be a positive experience. In Masini's (1994) exploration of the interrelationship between macro-level technological change and micro-level domestic change she suggests that despite the negative consequences of technological intervention, women are able to keep their "culture alive despite a social environment that seems bent on crushing it". Masini argues that this reveals women's inherent creativity and capacity to do several things at the same time. International organisations need to recognise women's creativity and respond to Cooley's (1986) observation that the creativity of ordinary people is a society's "most precious" asset. Technology for development needs to be on an "evolutionary, experimental basis" (Brooks, 1980) and women need to be allowed to participate in this process. The Chair of UNIDO's task force that prepared documents for the Fourth World Conference on Women stated that "The creativity and talents of all women are an invaluable resource, which can and should be developed for their own self-realization and for the benefit of society as a whole" (Tcheknavorian-Asenbauer, 1995). She goes on to say that technology has a key part to play in improving the lot of women.

Individuals at programme implementation levels are noted as having a genuine understanding of gender issues and as being willing to take subversive action, challenging cultural mores. UNIDO operates both women specific programmes and mainstreaming. The latter may be happening more at an individual level than an organisational level although mainstreaming may be the rationale for closing the Unit. This reflects Reanda's (1999:63) observation that although there is progress in mainstreaming gender issues in policy formulation, "implementation is still problematic".

International Trade Centre (ITC/UNCTAD)

The International Trade Centre (ITC/UN) is the United Nation's focal point for technical co-operation with developing countries. The broad policy guidelines that inform the work of ITC/UN are formulated by the World Trade Organisation and UNCTAD. The technical co-operation offered to developing countries includes trade support, human resource development, programme design and importantly, product development. According to UNIFEM's 1997 review of gender, science and technology in the UN, ITC/UN defines technology in broad terms as "product design, adaptation and development..[..].. trade and environmental issues etc."(p50). The organisation works to preserve "local knowledge systems and traditional 'production for trade' methodologies to the largest extent possible"(p51). UNIFEM's review notes that ITC/UN has no gender, science and technology focal point but does acknowledge the "integration of women in trade development"(p51) as a global priority. Contacts given in the review suggested that the organisation had a gender and trade focal point.

Two permanent ITC/UN staff members, the Senior Market-Development Officer, (male); and the Co-ordinator for the Uruguay Round, (female) and one International Consultant (retained by ITC/UN) based in the UK (male) were interviewed. Three areas of policy were covered; a) Market-Development of manufactured products, b) trade support services and c) handicraft. The male interviewees were both involved in the design and development of a low-cost wheelchair for mass production. The female interviewee had been identified as the gender and trade focal point for ITC/UN by a colleague named in the UNIFEM 1997 review and contacted at the outset of the research.

Literature obtained from the Senior Market-Development Officer and information from the Internet indicated ITC/UN's involvement in handicraft, referred to as "artisanal products", for trade and development. Unfortunately no one was available for interview in this area. The organisation's documentation and also comment from the International Consultant regarding handicraft is presented below.

Technology and design

Technology is used for both industrialisation and social development and as Horsman & Marshall (1995) observe it can be used for positive ends, both globally and locally, linking the individual and community. The relationship of economic and social development and the role of technology as ITC/UN sees it is discussed by the Senior Market-Development Officer who says; *"Obviously developing countries have no resources to be compared with the industrialised world. But we said will concentrate for the next several years on information technology, environmental technology and healthcare technology because they are crucial for the industrialisation of developing countries and for the social development of these countries as well"(UN3/16.1).*

The Senior Market-Development Officer expressed a view that the UN is myopic and has short term perspectives on projects which are often only intended to run for six months to a year and this raises issues of serious organisational commitment to supposed priorities. He has experienced the response with regard to commitment issues of *"Oh two years have passed - no longer a priority for us".* With regards to technology, the UN has accumulated a lot of technical expertise and this could be given to developing countries but they still need technical support which is again prohibited through short termism. The Officer is having to say *"No, no its not longer a priority"(UN3/a1.5)* when requests for technical help are received from developing countries. He obviously finds the current situation intolerable and *"so much frustrating",* he keeps seeing the *"faces of people"* in his mind *(UN3/a1.5).*He says; *"...we've got a number of World Bank projects, multi-million [dollar] projects with the transfer of technology components very high. When its not succeeded its failed only because no local staff were available..[..] and nobody can.. provide service to the technology"(UN3/8.4).* The Senior Market-Development Officer suggests a definition of technology as accumulated knowledge *"There is now the new stage in technology transfer, from 'know how' to 'know why' because 'know how' is just accepting the technology and you're just pressing buttons but 'know why' you can modify it yourself"(UN3/9.1)*(see Rath, 1994).

The International Consultant makes a point referring to 'appropriate' technology; *"There is another aspect..[..] For years we've said to developing countries that if we're going to get them to do something better then their approach has to be based on sticks and string and if they can't afford us they'll have to not know it. That is appropriate up to a point but if you go on applying that principle then there's absolutely no room for change, it will always only have a sticks and strings approach. And so the last decade I suppose, attitudes have changed in terms of the transfer of skills, away from that"(UN4/9.2).* The South Commission (1990) has pointed to the sense of inferiority in terms of technology that this approach has engendered. Steady technology development is described as an indulgence by Natarjan & Agbese (1989) but as other literature has indicated, technology transfer can result in permanent dependency (Cole, 1990; Gyeke, 1997). This hinders innovation and 'local' technology development as Biggs et al, (1995) point out and also maintains a cultural imperialism through who designs what for whom (Goonatilake, 1984).

"a wheelchair is a wheelchair"

As a venture in healthcare, ITC/UN has been supporting the development of a low-cost wheelchair for developing countries, an example of global/local intervention and more than 'just' top-down policy. A report published in May 1995 describes the venture as an export marketing project with a humanitarian face. At the time of the interviews, the Senior Market-Development Officer and International Consultant had been working on the wheelchair project for seven years. The Officer feels the project can be justified because it is humanitarian and he emphasises the point that the UN charter says it is an humanitarian organisation. However, he thinks that some people prefer *"nice projects"* and the wheelchair is not about *"cut flowers and golden flowers"(UN3/A2.1).* When the wheelchair project was first mooted some people did say *"why not concentrate on degradable coffins"* to which he replied *"how dare you joke about it, you signed up to the UN charter"(UN3/2.1).* This raises the issue of whether individuals committed to the organisation's symbolic policy can implement the policy effectively when there is little or no support from peers or

immediate management. Seven years is a long time to maintain commitment in the face of organisational negativity. The wheelchair project has become a "game" with ambiguous rules (Klijn, Koppenjan & Termeer, 1995; also see Stone, 1997). An aspect of this ambiguity is the implicit belief in the organisation that the wheelchair is 'appropriate' technology with all its negative connotations. This is despite the emphasis made in the organisation's report on the mass production aims of the project. The organisation's perceptions of what constitutes technology informs their policy and concomitantly substantiates their power in controlling how and what technology is used for development.

The report does not raise any gender issues that might be pertinent to the wheelchair and the project is claimed to be gender neutral by both the Officer and Consultant. They claim gender needs have been considered (with women as users not producers), the Market-Development Officer saying *"...I will tell you the gender component is very important for us, from the very beginning. From nominating the members of the international technical committee up to the final end to the evaluation of the project. The evaluation has been made by a disabled person, a woman herself and she's contributed a lot to this process of upgrading the results of the project.."(UN3/5.5.)*. The Consultant added that he was; *"bound to say, something that you obviously wont like at all and that is during the whole of the project which from my point of view took about five years, I didn't actually think in terms of women or men. That wasn't a factor.." "Absolutely"* interjected the Senior Market-Development Officer*(UN4/5.6)*. This was said with a certain pride.

Users were consulted as part of the design process and many of those users were women. Women were a visible part of the design process although the International Consultant is confident that even had there been no women users he would have considered their needs with regards to nursing babies because of his many years experience working with disabled people, male and female. There are other differences between male and female wheelchair users which could influence the design such as dress codes, independence of movement, 'being seen' and access to finance to purchase the product in the first place. Women's needs were heard only up to the point that the International Consultant was willing to recognised them. The International Consultant suggests; *"A wheelchair is a wheelchair and is*

usable equally by either sex so gender had very little relevance to the design of the unit. As far as the users were concerned I consulted organisations who produced the clients and I suppose there were more female clients than male clients but that was accidental I have to say. I could speak to women, I could speak to men because they were just there. We considered factors like can you nurse a baby in a wheelchair, can you get the wheelchair under a workbench in the factories. But gender wasn't something on my mind"(UN4/6.1). This describes Gorelick's (1991:471) observation that the privilege ascribed to being male goes unnoticed, is in fact a "state of unawareness".

I would argue that the association of the wheelchair with disability implicitly ensures its feminisation by the organisation. Being feminised means is cannot be associated with industrial production and capitalism but exists in the area of charity.

Handicrafts

As the UN's focal point for technical co-operation with developing countries in trade promotion, it was interesting to find ITC/UN involved with a programme associated with handicraft. As previously mentioned, it was not possible to follow this involvement in depth through interviews but it is presented here as evidence of a technically orientated organisation at least being conscious of the potential of handicraft for development.

ITC/UN is involved in the United Nations "Ten-Year Plan of Action 1990-1999 for the Development of Crafts in the World" through its trade promotion and development of artisanal products. In its 1996 documentation outlining the programme's objectives and strategy, the organisation acknowledges that handicraft production is "in line with a sustainable human development concept" defined as being human-centred and therefore "pro-poor, pro-nature, pro-jobs, pro-democracy, pro-women and pro-children"(p2). This is an explicit women's policy and the organisation has implemented programmes dealing with hand-made products, aimed specifically at benefiting women entrepreneurs. ITC/UN notes that

a market has to be created to generate demand for craft products if they are to be successfully exported. The intention of the strategy is to develop intra-regional as well as South-North trade. Improved production technology is mentioned as necessary to reduce costs and improve product quality whilst remaining within UNESCO's definition of an artisanal product (where the "direct manual contribution by the artisan remains the most substantial component of the finished product" (Etienne-Nugue, 1990)).

When asked about the emphasis on craft in the organisation and the development of technology, the Senior Market-Development Officer responded; *"I'm just trying to link what you say, what is the technology because technology and crafts, they are related but still different okay?"(UN3/6.4).* He felt unable to say more being *"a little bit out of this".* The International Consultant asked whether he could comment; *"...crafts is something which historically has been undertaken by charities or groups of disabled people. There's nothing new about it. Its been there as a principle for a couple of hundred years. It is not surprising is it, that many groups of disabled people, of disadvantaged people who want to make some sort of money should group together and produce something.... produce something that is pretty valueless in their eyes..[..]..its based solely on the expectations of the people who buy them for charitable reasons and that is something quite divorced and separate from the technological aspect and I'm quite sure it will go on however technology develops"(UN4/7.1).* This illustrates the dilemma for the organisation and for craft generally of how to move it out of the charity/nature discourse. Craft's association with the margins of economic activity (Renne, 1997), indicates the huge problem of moving sustainable, human-centred development into mainstream economic discourse.

ITC/UN is also establishing a prototype for a 'Virtual Exhibition Centre' for craft products. Here producers can promote their products on the World Wide Web (WWW) on a site maintained by ITC/UN. The initiative is limited to craft products because: craft requires "particular efforts regarding visual presentation"; developing countries "have a large and diversified capacity" in craft; the export of craft "can bring important valuable revenue... contribute to sustained economic growth... rural and women's development" (www.intracen.org/itc/virtexib 1997). The obvious

limitation to this initiative is initial access for producers, small-scale enterprises may not have the capital to invest in good quality photographs or the training to produce a 'company profile' required by ITC/UN for inclusion, never mind access to an on-line computer. This is pertinent for both male and female artisans but as Lyon (1991) argues, women particularly tend to lose control at the marketing level. The initiative indicates a limited understanding of the gender issues surrounding craft production and access to technology. It is easy for symbolic gender policy to be used as justification for an initiative and equally easy for the policy to be sidelined when it makes implementation of the project too problematic.

Getting round gender issues in the organisation: "alibi" women

The success of gender awareness is measured by the numbers of women taking part in projects to the point of needing "alibi" women. The reality evident from the interview with the Co-ordinator is that she has found no men willing to co-operate on gender issues. She expressed an ideal scenario that despite the change over a number of years has still to happen. This is tied up to androcentric approaches to policy and patriarchal structures of the organisations and is further emphasised by the 'maleness' of technology and design and technological determinism. The reality of the status quo indicates problems with the concept of mainstreaming gender. Without co-operation mainstreaming can, paradoxically, further entrench women's invisibility through their supposed visibility as "alibi" women. Traditional patriarchy, O'Bannon (1994) argues, is perpetuated by criticising gender biased processes.

In ITC/UN the Co-ordinator suggests that women are; *"very consciously considered as a 'must' component of our projects. Also we have the 'alibi' women, a concept I'm not always happy about...[..].. Every kind of training group you have to have at least two or three women, if not it doesn't look good. And I have made many, many enemies in the house because I have said no I don't want that woman and they have said 'What!!'. Because she wasn't qualified..[..].. if a woman is not qualified, it would be a waste of her time, motivation etceteras, frustration. We would create yet another 'Look there is a beautiful woman and now look what she's doing, she's really stupid'..[..].. So that makes things worse in the mid-term instead of better.*

That's what I mean by 'alibi' women"(UN5/9.1). This is the present reality of gender policy in the organisation although the Co-ordinator suggests that there has been some positive change over the past ten or fifteen years; *"last ten fifteen years have changed a lot. But I think as well today we need a re-thinking on new approaches because based on that progress we can be much more precise and much more focused in what we should be doing, in what we have learnt from the women, what they would like us to do. The women and men because there's a lot of co-operation as well and I think we are now at a stage where we should say there are many men, willing men, to co-operate with and we should. While it was perhaps necessary in the beginning to say and we want our territory and we need to, to establish ourselves, its perhaps as necessary to say while we still need to do that, we as well need to look for co-operation with those men or those groups, those people who are, fighting for civilisation"(UN5/10.1)*. This is perhaps an argument for mainstreaming gender issues, but it also points to the dilemma for women working in an organisation with symbolic gender policy. The element of mutual trust in gender policy implementation should be there (see Wallis, 1997) - there has been progress but how far to give up women specific projects. It is still women who have to seek co-operation from male colleagues, as Wieringa (1998:369) notes, "women's gender interests are incorporated within a network of imbricating power relations".

The Senior Market-Development Officer discussed the two sides of gender issues - internal and external to the organisation. The projects cannot select women only or focus on women because there are so few women in senior positions in technology and particularly high technology and yet within the UN there is an organisational policy for reaching a target of 50% women. He notes; *".. there are two sides. One side is whether we are focusing the project implementation on the specific gender points saying lets select the managers, the senior officers, marketing directors which is preferably women. No, we're not doing it. Because in such a business as technology and specifically high tech we have no choice to select and in many cases... most of these senior positions are occupied by men. That is the reality of life. But at the same time in ITC policy and United Nations policy as such that there is a target, fifty percent of staff of United Nations should be [women]. You know what I mean and its a very tough situation now when the personnel division is*

pushing the women to get the position. That's good, a balance, bring more charm, new knowledge as well (laughs)"(UN3/3.3). Within the organisation it is being made difficult for men, or rather it is perceived to be difficult for men. Is this a challenge for male identity that then becomes something that can be dismissed in projects by talking about numbers of women rather than dealing with the gender issues (not to mention women providing the charm)?

The reality of the situation with regard to women and technology is frequently referred to in numerical terms but not addressing the issues of why and any long term strategy for dealing with the problem. As the Co-ordinator (female) says; *"...especially on the technology side..[..].. I mean the vacancies are not yet occupied only because the personnel cannot find the appropriate women. Let's say technology is about education, twenty years in the electro stations, running the electro-power or nuclear electric stations with international experience and expertise, multi-lingual. In developing countries never, from industrialised countries, the UK, how many high level positions with women you've got with such kind of background? Not easy to find, not easy to find. That's why don't take it as discrimination (laughs). That's the reality.."(UN3/4.2).* The highly sectorialised UN system has, suggests Reanda (1999:51), resulted in women being "just that: a *sector*". This combined with gendered technological determinism presents women with huge barriers - not insurmountable but defended by internal and external patriarchal power structures.

There is an ambiguity in the organisation towards gender policy illustrated by the Chief of the Market-Development (male) section having *"no idea who is doing gender"(in UN3/s3)* i.e. who was the gender focal point in ITC/UN but being convinced that somebody had been appointed. The male Senior Market-Development Officer was sure the female Co-ordinator was the key person but she was equally sure that she was not. The Co-ordinator had formerly said that she would only represent ITC on the UN wide Gender Advisory Board if the position was given proper status within ITC and she was given time to undertake the task. The uncertainty over the position had arisen because the organisation had been recently re-structured and the person who was the focal point for women in trade development had left.

ITC/UN claims to have always had a gender focal point if a very general one which played some part in monitoring projects to ensure that consideration was given to gender issues. Apparently this was done as a routine matter *(UN5/4.1)* but it is difficult to see how or whether this will continue to have any influence on projects when no one I spoke to in the organisation was clear who the gender focal point was since the restructuring. There appears to be a position separate from the gender focal point the occupier of which takes part in UN meetings discussing gender issues across the UN organisation. The Co-ordinator identifies these as *"two ongoing functions which are done as routine"(UN5/4.2)*. When asked if as a consequence of this routine monitoring her colleagues were gender aware, she remained silent for several seconds before answering *"I don't know"*. When this was queried her reply was still *"I don't know"(UN5/4.3)*. I offered the example of UNCTAD who say they do not have explicit gender policy because it is something they do implicitly. The Co-ordinator was prompted to say; *"That's what we all claim... How far that is true.. Yes of course and gender issues or more explicitly not gender but the role of women in trade is something ITC pays special consideration to. Its one of our priority areas. It is at the same level as give special attention to Least Developed Countries, to small enterprises, to women entrepreneurs and managers that is very, very explicit and it is monitored at a similar level. How far that really enters the day to day operations of each and every one of our colleagues, I think we're back to your question of personal commitment"(UN5/4.4)*. The association of women with the weakest, and or smallest, places them firmly in the 'different-from-the-norm' category. Paying attention to women achieves charitable status within the structure of patriarchy. The Co-ordinator is also describing symbolic policy; 'espoused values' versus 'values in use' (see Stone, 1997).

As the Senior Market-Development Officer has experienced, here is a strategy to get gender issues acknowledged despite continued problems of individual denial and getting around it; *"we've got not only the internal attitudes of the staff but what is important to us, you get the inspection committee which is looking at this and saying 'Look, that is this project which you have designed, which you want to implement but I cannot see the gender component, how can we work out all this' and I start to think about it and I'm incorporating it and I'm reporting to the*

evaluations as well. It works"(UN3/11.1.). Women's participation in projects can be counted he suggests; *"You can count it, you can measure it, lets say trained staff, women staff, senior or marketing, participation of women in the training events on the spot or abroad and networking as well. Establishing I would say some good results are measurable and visible. Its much better than lets say fifteen years ago because I can trace it from Nairobi. I used to work in Africa myself, it was never before in such kind of positive and practical attitudes than now. Its a good shift"(UN3/10.2)*. Symbolic policy can also symbolise 'intention to change'.

The Co-ordinator thinks that pressure from other UN agencies, the donor community and public opinion can influence policy and that this has definitely; *"helped advance things. Second influential factor would be the different persons and their standing in the organisations, not hierarchical but credibility, professional credibility of persons doing that work or making these recommendations. And if there are persons saying, he or she, it can be he and she, 'there he goes again with his women',..[..]. So outside pressure, the standing, the professional credibility within the organisation... and then what you said in the beginning, the personal commitment"(UN5/11.1)*. Individual credibility is important but commitment can still be dismissed as an individual's hobby horse as a way of getting round the issues. Derogatory comments can be made about "his women" suggesting a challenge to masculinity again and potential backlash. The Co-ordinator says; *"you have again this circle of being very careful, while on the outside you have to make the point and you have to create awareness, not over push that because that can backfire.."(UN5/11.1)*. Political skills are needed for the successful implementation of policy and these skills are particularly pertinent for women (and possibly men) trying to implement gender policy (Prügel, 1996). Perfect implementation may be "unattainable" because of external circumstances beyond the implementers' control (Hogwood & Gunn, 1993), but for women trying to implement gender policy, the organisation's internal circumstances can often make any implementation unattainable.

Individual commitment

Individual women in the organisation who are committed to gender issues or the cause of women have to fight and clearly struggle to get projects secured. They are also open to ridicule from the mainstream of the organisation. This clearly happens because gender and women are not only interchangeable as concepts but also because they are special cases, not part of the normal practice of the organisation regardless of the symbolic policy declaring other wise. Undertaking projects for the disabled also leaves the implementer open to ridicule. When asked if personal commitment to gender issues has an influence on project implementation the Co-ordinator was very clear; *"It definitely has, definitely has yes. And I would say that is probably has the two extremes. It has the extremes of colleagues who I know and they're known in the house to always fight the cause of women..[..].. And there's exactly the other effect of women and women issues being completely ridiculed for right reasons because there's often exaggeration about all this women and trade and when it becomes too automatic and it's applied across the board without any technical substance, it is very easy as a subject to be ridiculed...[..].. it is a mixture of the personal commitment and the framework in the institution"(UN5/5.1)*. The paradox of personal commitment and symbolic policy reoccurs throughout the ITC/UN interviews - one attempts to implement the organisation's symbolic policy and one is vulnerable to ridicule.

The Senior Market-Development Officer said women brought their "charm" as well as their "new knowledge" to the organisation when you could find an appropriately qualified woman. The emphasis in the organisation continues to be on women as a special case, other than the androcentric norm. The strength and depth of this belief is perhaps overwhelming in ITC/UN because of the stereotyped masculinity of its terms of reference. The UN's wider symbolic policy of gender awareness is too difficult to implement and easy to get round using reality and the specialness of women. In relation to her own organisation, the Co-ordinator says; *"I think it's very difficult for an organisation like ITC, a very small organisation, a very technical organisation, to find that kind of natural balance because the moment you go too much to pushing that there is something special about women and there are not enough women, where are they? And ..the argument is 'yes we welcome women'*

which is true, 'you know they make the atmosphere of any kind of events so much nicer if we have a woman around', yes of course and then the next argument is 'and I know an outstanding business woman, she leads the whole of Indonesia or she runs the hotel business in Thailand'. Yes one woman, or two or three and all of these women our colleagues know are excellent. So what about the mediocre women, because there are so many mediocre men... It's that very, very fine line which I think is probably the biggest question mark and biggest challenge if we take it from a technical point of view"(UN5/3.1). Here again is evidence of 'getting round' symbolic policy versus 'trying to do something'. There is a very fine line between welcoming women as a means of getting round gender policy and welcoming women in order to facilitate change. Who tells the story, the language used and who participates in the conspiracy for and against implementation is key. As Stone (1997:80) says, the policy process is "full of devices for validating need" and this is happening inside and outside the organisation. Reanda (1999) notes the "male world" of the majority of UN sectors and acknowledging this highlights the exclusive network of men who, Wallis (1997) asserts, promote one another to positions of trust. There is a struggle for ideas and a struggle between genders.

Getting round gender issues in project implementation: counting women

The UNIFEM document on technology and gender states that ITC/UN has participation as a key aspect of its work. The Senior Market-Development Officer responds to this by saying; *"You know the women agenda is a priority for the whole institution and for the United Nations and specifically for ITC. And its on the political agenda. It was proclaimed by, pronounced clearly by the countries, developing countries, industrialised countries. And it was also clearly announced by the executive director of ITC. And wherever it is possible ITC staff is trying to include gender elements in the programme development..[..].. But we've got this so called inspectorate, evaluation in this system, in ITC as well which is watching, which is watch dog and saying where is environmental, green carpet component, women component and what else.."(UN3/10.1).* ITC/UN staff try to include gender

elements "wherever possible" - there are clearly many instances where this is not thought possible - women are absent so remain invisible.

Projects looking at where women are not, or why women are absent from so many areas of technology are key to acknowledging the role of gender issues in technology and development. Project implementers can always find a way to get round gender issues and indeed to get round women's invisibility using culture and reality as the rationale - there just are no women or there just can be no women. There is a perceived shift in attitude to gender issues but the widespread reality of this is questionable. Incremental change may be perceptible, gender policy having made people think about gender issues. However, there are still ample opportunities for getting round the real issues. Counting women continues to be a favoured tactic, there are no women and nothing *can* be done, or there are women so nothing *need* be done. Patriarchal structures and cultural change are not addressed overtly but it is possible that continued harassment from evaluation units will eventually result in structural change with regard to women and technology, although, as Harrison (1995), emphasises, collecting information on women does not address inequalities revealed.

The organisation has symbolic gender policy, attempts to implement this by the organisation are again at the discretion or individual commitment of the project implementers. The UN provides a formalised international policy arena and the attitude from interviewees was that "we the UN" are in charge. As the Senior Market-Development Officer says; *"..we are in charge, we are trying to bring the knowledge to the recipient countries and it means that we need to be well presented, well connected and have a very solid networking system..[..].. Inter-governmental because we are inter-governmental institution and at the same time with the non-international institutions and international organisations as well. Business associations, consultancy, that's a must and especially in the business development area"(UN3/13.1).* Networking is essential for competing on the global market and business development. Women's access to associations and many formal networks is limited and probably non existent with regard to informal business networks which are invariably patriarchal in structure and determinedly 'top-down'.

The formalising of women's needs gets them heard but also makes them special, different and to be measured against the patriarchal norm. It seems to be difficult if not impossible to challenge this norm within the formal policy process of organisations. The process of grassroots response to projects feeding back to the advisory/policy level of the organisation is through project evaluation. This has been formalised across all the organisations interviewed and is illustrated by the female Co-ordinator who says; *"..for every project of course there is an evaluation.. and very often you would find a special sector, or specific mention of gender issues. To some extent because it has been formalised, you have to say something about the environment and women and Least Developed Countries. Again I would say that is perhaps not ideal but necessary in terms of really getting these areas to, to be checked systematically so I think there is quite a lot of that within the regular mechanisms of monitoring or quality assurance or whatever you call that, in the house. Women certainly have an explicit place"(UN5/10.3).*

The Senior Market-Development Officer claims that there is a chain reaction; *"From ITC staff through the project to the co-operating enterprises in developing countries. We're trying to bring women executives for implementation for training sessions"(UN3/11.2).* However the success of this depends on where the project is being implemented; *"it depends because if you are operating in geographies like Pakistan.... depends on the religions, depends on the status of women in the country. You cannot crucify them (the country)..[..]. in other countries... Thailand, China, Philippines, women play a very important and they are the locomotives that's very good and that's why I'm saying its different. It depends on which region, which country you're focusing and specifically which industrial sectors you are approaching. High tech, well high tech is not easy, not easy because just a few women are in high technology. In the handicrafts, textile, they are more and more involved. Because you need to classify inside the technology..."(UN3/11.3).* The Senior Market-Development Officer suggests that the implementation of UN gender policy through projects can be problematic because the organisation uses consultants; *"...the United Nations staff is different and most of the projects are implemented not by the core staff but the consultants and that brings with it different visions and different attitudes. And sometimes consultants are not taking into consideration these gender, gender because they are nearing down, focusing*

on specific issues, but as I said, evaluation unit is strict in watching these things.."(UN3/10.2).

The Co-ordinator is cynical about the organisation's symbolic policies although she acknowledges the need for them in getting issues in the open. The difficulty comes in the implementation. Doing special projects for women highlights their absence from the androcentric norm and also sets women up to fail. Existing structures are not challenged by the projects so at the end of a project the women return to what they know already exists and this can be dismissed as the women consenting to the status quo as Fierlbeck (1995) has found. This probably results in them being further disempowered, as the Co-ordinator explains; *"there has been a lot of talk, a lot of policies, a lot of high flying declarations which are necessary and they are useful and they are meant seriously. But..[..] the bridge to have elements, to integrate at the technical level which really helps women entrepreneurs, designers, producers to become part of the business and not to artificially be promoted to something that falls flat, you know, the moment the project is over or which pushes them to do things which they will never be able to do on their natural environment without help and the push of an international organisation, that is our biggest trap.."(UN5/3.1).*

The Co-ordinator says; *"Areas for example where ITC has done something where I think, would as our way of addressing women and trade..[..].. are to start where women already are, meaning producers in rural areas and we have realised that in our concept of export production village. Grouping several rural areas through joint export marketing outlets etceteras. In these kind of activities or projects we had a higher percentage of women producers than men producers. So that would be our way to go about increasing or paying special attention to the role of women and trade. Not saying we should and must have women here but look at areas where our routine activities we have a first sign of yeah, a critical mass of women"(UN5/5.1).* Women are essentially invisible in this approach. Questions of why they are invisible will never be answered because they cannot be seen in this androcentric approach. There are more women involved in production at the rural level and that is a fortunate statistic for when the project is evaluated. However, the Co-ordinator suggests there has been a gradual change for women; *"who are*

already active in that field, international trade..[..].. is an area, is not exactly the first approach that you think of business women but a lot of things have been done in the last ten, fifteen years by organisations like ILO and UNIDO pushing the role of women as producers, as entrepreneurs"(UN5/5.1). The Co-ordinator offers a logical yet emotional explanation for ITC's lack of involvement with women; *"ITC is dealing with international business and international trade is kind of second level because I, and that's very personal, think that it would be irresponsible if not really unprofessional, to push women in some kind of village to go into export operations without creating the steps that are necessary in the intermediate"(UN5/5.1).* This is obviously correct and perhaps suggests the need to re-think an organisation's remit at the same time as formulating gender policy.

Special projects create another kind of stigma for women which is the result of a failure to deal with gender issues and where gender means women. It is women who have to change and are perceived to be the 'problem' to be solved. Assumptions are made by development organisations, often claiming gender awareness but failing to show more than a superficial understanding of the issues. There continues to be little participation of women recipients in project formulating and implementing. The female Co-ordinator observes; *"that while the general discussion of the role of women in all areas of social life has brought awareness and a lot of public discussion, it has done some damage as well. Because there have been very artificial projects created for women which a) the women didn't want, which particularly in my own experience, some business women told us 'look there's the year of the dog, the year of the tree and the year of the woman so thank you very much, we are part of a business community and we do not want to be singled out'. So while there is definitely need for some awareness, you would as well have to be very careful not to create another kind of stigma.."(UN5/2.4&3.1).*

In the area of trade and business the Co-ordinator has; *"learnt to be very careful about what is possible and what is impossible because of course I'm culturally biased.. and I have very clear views about what can be done, what couldn't be done and if I learnt one lesson it is to be very careful and try to talk as much as possible with really the people, the men and the women living there and actually doing the business. Not the policy makers, perhaps not the international agencies*

with their projects etceteras but trying to really talk to the people with whom we are supposed to work. To learn about the ways in which they do things in our area, in production and business. Because they are doing that for centuries also, they have some experience which if we try and find out in a... in a solidarity way, they are willing to share"(UN5/8.1). The Co-ordinator is clearly aware of the patriarchal conspiracy to 'get round' gender policy having expressed some cynicism towards the odds of influencing any change. However, she reveals individual good practice and in conjunction with other comments suggests a 'conspiracy of good practice'.

FINDINGS

Gender policy in the organisation is clearly identified as being symbolic by the Co-ordinator. She indicated a considerable cynicism about the attempts that had been made to implement gender policy both within the organisation and in projects, despite acknowledging that there had been some positive change. The lack of women in senior technical posts in the organisation is blamed on the lack of women in technology generally. This may be a valid argument but the lack of genuine commitment to addressing the issues is highlighted by the Chief of the Market-Development Section having "no idea" who was "doing" gender.

The organisation does have an explicit women's policy in its craft development programme. Craft production is 'in-line' with the aims of sustainable development, sitting on the fence between the nature / culture dualism. The relationship between craft and technology is problematic for the Senior Market-Development Officer and the Consultant. The implicitly held belief is that craft is charity based, not part of mainstream trade.

Women in trade is one of the organisation's priority areas but it is an area associated with the weakest (Least Developed Countries and small enterprises). An organisation identified with mainstream international trade is able to use this as an explicit, morally unassailable policy whilst using the same policy to justify side-lining

the issues in the interests of the larger, global picture. Equally the symbolic policy can be used to symbolise the organisation's intention to change, eventually.

Two models of policy implementation are evident in the interviews; symbolic, top down and personal commitment or conspiracy (Wallis, 1997) to circumvent peer pressure. Organisational commitment to espoused policy priorities, for gender and technology, is challenged by short-termism in project implementation. The exasperation felt by the Senior Market-Development Officer and Consultant was tangible. There is a lot of room for discretion but little power taken and an inappropriate implementation process results.

DISCUSSION

The three UN organisations interviewed all publish organisational rhetoric on gender and technology to some degree, illustrating D'Amico's (1999:29) observation of a "paper commitment" to gender equality in the UN as a whole. The organisations are tied into the overall UN policy on gender equity and symbolic policy that this will also be an area dealt with in programme and project implementation. The symbolic policy is for sustainable human development and this is assumed to be gender inclusive but can of course be highly gender specific with the 'man' as the definer of what it is to be human. The implementation process is, say Hogwood & Gunn (1993), a process of interaction between organisations with different values. This is evident within the United Nations, despite its overall policy, the organisation's "compartmentalised structure" has ensured the persistence of women's invisibility in every area other than so-called 'women's issues' (Reanda, 1999:51).

The conclusions drawn by UNCSTD's Gender Working Group (GWG) review are evident in the interviews. Responses to the Group's recommendations are less visible however, for example the UNESCO publications and UNIDO's organisational response to the Unit do not reveal any explicit organisation wide programmes to integrate gender and technology. Also, no guidelines on how to

incorporate gender and technology questions into routine monitoring and evaluation were evident.

The interviewees showed a noticeable difference in approach to being interviewed depending on whether their time was freely given, through interest in the research or if they had been instructed to take part by their managers. The level of personal response, the use of the first person and taking responsibility for their own opinions was most noticeable with the women interviewees. The women were not concerned with individual confidentiality or being identified. This might reflect their perceptions of their position in the organisation, lack of a power base yet determination to pursue their commitment to gender equity. Individuals were clearly holding on to personal convictions and attempting to use the organisation's symbolic policy to substantiate their actions. This was done even when the actions may have been considered subversive by colleagues. Arguably, the UN's commitment to mainstreaming gender should strengthen the women's position vis-à-vis gender and technology policy. However, as Edwards (1994:121) notes, mainstreaming often results in new information which challenges and is consequently likely to be buried - "personal beliefs versus institutional agendas". The men interviewed found the overall UN policy on gender equality within the organisation in terms of numbers difficult to deal with. Underlying resentment with the promotion and recruitment of women regardless of merit, positive discrimination, was evident. A female also expressed problems with this because of the high chance of failure as a result of a limited pool of appropriately qualified women in the technology field.

Gender focal points are a UN organisation 'must', the level of tokenism shown towards these is evident in a number of ways. In ITC/UN no one was clear who the gender focal point was after the re-structuring, the men assuming that the task would fall to a woman. The woman was adamant that she was not it and indicated that it was a responsibility not taken seriously by the managers, no resources being allocated etc. The gender focal points are nearly all women. The Unit in UNIDO is now disbanded and at the time of writing no gender focal point had been formally identified. At best this reflects the perception of technology as being gender neutral, at worst it confirms the depth of the nature / culture dualism that pervades technology policy. Individual commitment appears to be the bridge between

symbolic "high flying declarations" and policy implementation. Getting around gender issues in technology is still evident despite organisational monitoring and evaluation structures. The nature / culture dualism is called on to implicitly support the technology is neutral argument. Women are associated with the weakest areas of production, the least 'cultural' in that they deal with the basic needs provision of food, clothing and fuel. Craft production is an exception in that women are involved in the production of artefacts with no clear 'basic needs' role but here craft has achieved charitable status. The interviews and publications revealed a limited understanding of design and its relationship with technology. Design is largely associated with handicrafts and aesthetics.

There is little or no gender disaggregated information regarding technology based programmes and projects. This is not requested from recipients, indicating the low level of organisational commitment to change, particularly as the 1997 UNIFEM review indicates this would not be difficult for organisations to do. Programme evaluation and monitoring does have a gender component - for both the UN and national programme implementers, but the depth of policy implementation still relies on individual commitment. Although information is not gender disaggregated there is an emphasis on the numbers of women involved in both the organisation as staff members and participating in projects. The lack of information indicates the prevailing belief that technology is neutral despite UN publications that state the opposite. Short-termism of themes, programmes and interest is criticised by the interviewees involved in project implementation. The commitment of individuals to gender and technology issues is evident in the organisations more closely involved with implementation. The interviews indicate a gender split in approach to technology; the women experiencing its gendering and emphatic that it is not neutral, the men insisting on its neutrality.

There has been gradual change for women, increased access and ownership of business and technology. The interviewees (male and female) suggest this has happened over the last ten, fifteen years. The women involved in implementation indicated the importance of listening to women recipients, to hear what their technology and business needs actually are. In relation to the ITC/UN project being implemented by men, hearing women was by luck rather then good judgement and

was not thought to have been necessary anyway because of the neutrality of the technology involved. Tradition and culture and technology and gender policy implementation are considered to be inextricably linked but there is a reluctance to address cultural issues even when they clearly prevent the symbolic policy being implemented. In UNCTAD, the male interviewee stated categorically that even symbolic policy could not be committed to writing because it would not take cultural mores into account and these cannot be challenged for successful implementation. The women, however, are prepared to consider militancy and challenge so-called traditional reasons for why women continue to be discriminated against. They suggest that as donors they can manipulate the status quo.

Development theory currently presents mainstreaming as opposed to special women's projects as the way to 'do' gender. In practice the two UN organisations implementing projects take both approaches. Women only projects are cited as being still necessary in the area of technology because women are so far behind the mainstream. For example the majority of women entrepreneurs are found in the informal sector with little access to information, finance and formal networks.

UNESCO and UNIDO publications use three phrases that are unusual in the words that are put together:

- Technology for social rights (UNESCO)
- Equity and human rights in S&T
- Sustainable industrial development (UNIDO)

The implementation of these points through international technology policy would necessitate a change in gender structures and a recognition that policy can be permissive as well as prescribing.

CHAPTER EIGHT

DISCUSSION AND CONCLUSIONS

The research found that enforcing the implementation of international policy is not straightforward. Gender is located in a complex, conflicting and "open" nesting of implementation structures from local to global levels in which the commitment of key individuals (for and against) has a crucial impact. The increasing emphasis in development organisations of mainstreaming gender brings with it particular issues of 'hearing' women and the continued need for women specific programmes to work towards empowerment. Mainstreaming may be presented as the organisations' symbolic policy but women specific projects are still seen as necessary by policy implementers - the paradox of mainstreaming. There is the continued male domination of technology areas in development organisations. The concept of 'getting round' gender issues, illustrating the degrees of discretion in the policy process has been introduced and the centrality of individual commitment for policy implementation highlighted.

The importance of taking a feminist perspective is highlighted in the first phase of the study where the initial literature review, first phase interviews and discourse analysis revealed the position of women in relation to technology and design to be one of passive receiver, consumer and user. Women as creators of technology and design are largely invisible. The study is subversive because it makes this visible. There are moves being made to change the status quo and a feminist perspective highlights the successes. It also, importantly, emphasises the structural hurdles that prevent, unless challenged, women from participating in technology and design activities as well as the opportunities represented by the loose policy set and consequent discretion. The feminist perspective has connected the micro-level to the macro-level of gender policy and technology and revealed the process of "ruling through patriarchy and capitalism" (Currie & Wickramasinghe, 1997) which pervades the use of technology in and for development. The interviews revealed low levels of consciousness re: technology process and policy process (working

with the implicit belief that technology just exists), and levels of awareness of linkage of policies, agencies and discretion. The invisibility of international policy at local level was revealed as the research progressed from the local to the global level.

From the UN down, all the development organisations interviewed had symbolic gender policy and there was an emphasis on broad policy issues but no specific gender and technology policy. These broad policy issues are generally outlined in documents and publications and were only occasionally referred to by the interviewees involved in project implementation. The exception is ITDG where technology is the raison d'être although the organisation's technology policy was not referred to explicitly. Arguably the lack of reference to the organisation's technology policy indicates the strength of the hidden ideologies of project implementers (Danzinger, 1995). The interviewees in all the development organisations indicated that ad hoc technology policy (Edquist, 1994) was happening at the level of implementation. At national levels Scheinstock (1994) suggests that implicit technology policy becomes increasingly explicit as it moves out of the traditional economic policy arena and becomes inter-linked with other policy areas. This can be seen happening at the level of international development organisations where arguably the push for gender awareness has resulted in technology policy receiving increasingly overt attention. (e.g. UNCSTD Missing Links publication also ITDG's Do-It-Herself programme and UNIDO's high impact programme). UNIDO claims to have "abundant evidence" that given access to technologies (and finance) women can become successful entrepreneurs, ITDG points to the success of women specific technology programmes for empowering women as does UNCSTD's Missing Links publication. DFID is moving towards less 'symbolic', taking steps to ensure that gender is incorporated in its technology based projects.

Gender sensitive policies have been formulated and presented internationally via networks of international organisations and NGOs but there is little evidence that these have influenced mainstream technology policy. The policies have been presented on women's networks and gender networks and this appears to further entrench the "given" that gender issues are women's issues. This is despite the

push for sustainable development and the considerable body of evidence that shows that women's involvement and empowerment is integral to the success of this. Evidence of this is presented in UNESCO's World Science Report and several other recent publications on technology policy and development that either tack women on to the end or fail to mention the importance of gender at all (see Schienstock; Edquist, 1994; Kaplinsky 1990; etc.). Why this happens is discussed by Goetz et al (1997) who argue that changes are necessary to the organisations' structures themselves before there can be more than slow change. The research has revealed that in international policy, parallel organisations do not know what the others are doing and are in fact, unconscious of the processes which interlink them.

Policy Implementation

The research focused on policy implementation and emphasised the role this has to play in the international policy process. The research identifies three models of policy implementation: i. Top-down; ii. personal commitment / conspiracy; iii. Bottom-up/ participation. 'Getting round' gender policy and the issues is shown to be working against successful implementation at the top-down and bottom-up levels. At the level of good practice, implementation is allowed to inform policy formulation. Here international development organisations can influence different levels of the process structure, for example the NGO influencing the UN. There is also the level of implementation that might have a positive outcome but has required implementers to undertake subversive action.

Links between the organisation and other development organisations exist through donor organisations and the expertise of the organisation in relation to technology. The Gender-Technology Expert in the NGO sector did have opportunity to extend subversive action to United Nation organisations and influence the implementation of gender policy, raise awareness. Similar arguments are indicated in the NGO and the UN in that there is clearly symbolic gender policy but in relation to technology there are 'official' extenuating circumstances that allow these to be 'got round'. Paradoxically both the neutrality of technology and its masculine gendering are

used by project implementers and technology policy formulators. The call for facts and evidence is made in an attempt to block any subversive action. Siddharth (1997) notes that the World Bank acknowledged that the organisation's leadership had to be committed to gender issues for them to receive prominence and certainly this was found in the organisations interviewed. However, top-down commitment is shown not to be adequate for ensuring gender policy implementation in technology projects. This follows Klijn, Koppenjan & Termeer's (1995) observation that in a "network context of policy projects" top-down management is "rendered inadequate".

Women have to become 'masculinised' in order to get women's technology needs on the technology policy agenda and implemented. Women talk of using coercion, being a harridan and having the 'boys by the balls'. Women implementers spoke of having to be militant and aggressive in order to ensure that their organisation's gender policy was implemented by 'others'. The complexity of the implementation process allows for discretion - not taking the organisation as a patriarchal monolith but offering sites for struggle (Peterson & Runyan, 1993; Peterson, 1997). Meyerson & Scully's (1995:586) concept of the "tempered radical" where there is a continual struggle between the tension of personal and professional identities at odds with each other is evident in all the women interviewed who experience this to a greater or lesser extent (the one exception may be DFID's Assistant Engineer who has had to deal with issues of identity during her education and training in the male dominated field of engineering). Meyerson & Scully (1995) suggest that this struggle, often invisible, can provoke change which they say "often comes from the margins of an organisation". This picks up on conspiracy networks within the organisation. A negative aspect of women accessing technology is indicated by ITDG's two male project managers. Threats to their personal identity through having to implement gender policy in their essentially technology based projects may engender feelings of dogged determination to ignore the issues rather than any sense of "fraudulence and misalignment" with the mainstream development discourse (Meyerson & Scully, 1995:587).

There are people fighting against the formal structures, who are not colluding with the status quo, using conspiracy and coalitions. Individual women in organisations

are having a positive effect at the level of implementation if only in a limited way but the individual is in a vulnerable position. Women are moving the frame re: patriarchy through the implementation of gender policy in relation to technology but it is very fragile, a result of technology being a traditionally male domain.

The research raises the issue of whether mainstreaming is helping to break down male protectionism in technology or adding hurdles to the implementation of gender policy in this area. This reflects Reanda's (1999:63) observation that implementation remains problematic despite the progress in mainstreaming gender issues in policy formulation. The pressures for change have not gone away and women's persistence is having some positive results for example in terms of UN symbolic policy. The fact that the UN resources the Gender Working Group and supports the publication of gender and technology policy specific literature does point to progress. The publication also points to the number of individuals involved in international technology policy and the number of organisations. The fact that it was so little referred to by the interviewees indicates who has the bargaining power at the policy implementation level - not women. It also reveals a lack of awareness of the useful nature of such policies and the opportunity for discretion by those who do. Deterministic discourse is held by those who have the power. Science and technology continue to be central tenets of patriarchy and male supremacy and the gendered nature of technological determinism are clearly evident.

Alger (1996) asserts that NGOs are playing an increasing role in the UN system making visible contributions to the development of UN competence at the grass root level. The effectiveness of UN-NGO collaboration is also identified in the Missing Links publication, UNCTAD's Gender Working Group recommending continued collaboration with NGOs. There is increasing visibility of and active pressure from women (e.g. 30,000 women attended the Beijing conference largely through NGOs (see Reanda, 1999)). Through NGOs women can achieve a consultative status to the UN and this is undoubtedly progress but as D'Amico (1999) highlights, these women may have a voice but they have no vote and this reflects the reality of the status quo as found in the research. Despite the weakness of the central structure however, symbolic policy does allow people at ground level to act - the move from macro policy to micro implementation. The macro policy /

micro implementation of gender and technology permeates the study and was evident in each organisation interviewed and also across the international policy structure. Each organisation has macro policy that is implemented at a micro level. Similarly, donor organisations have macro policy that is implemented at a micro level by other organisations. This brings together two 'doses' of macro or symbolic policy that have to be somehow incorporated into the implementation process at ground level. The complexity of this allows 'gaps' for individuals or coalitions to subvert the symbolic policy - either positively or negatively in support of gender and technology.

The approach to the policy process most clearly identifiable in the international development organisations was that of rationality. Here the policy process has clearly identified stages: formulation, implementation and evaluation. The organisations, at the symbolic policy level worked with the premise identified by Bacchi (1999:17) that "there is a real world which is accessible to objective description and analysis". The rational approach works on the premise that there is an identifiable problem (social and or economic) and works with the assumption that the task can be approached rationally, the best solution can be devised given cultural, political and economic constraints (Bacchi:18). This is undoubtedly the case found by the research in development organisations and highlights the difficulty of introducing gender issues into technology policy, identifying the complexity of mainstreaming gender policy. The rational approach to technology is to declare gender neutrality whilst supporting a gendered technological determinism.

Individual commitment and 'getting round' gender

The research made it clear that there is a struggle regarding gender and that there are levels of 'getting round' gender issues and individual commitment. Asking questions through the research made individuals aware of the issues and some clearly felt awkward. Values must not be seen as simply personal preferences which have no bearing on the policy process. In a democratic system numbers of

groups/individuals can be given a voice and the "process of decision making" can be kept as open as possible (Bacchi, 1999:18). Steps can be taken to increase the access of less powerful groups to influence the decision making process. In development this means empowering women and development works in environments where there is no democratic process. Democracy is often absent in the implementing organisations themselves.

Technology

There is recognition that small and medium manufacturing enterprises are key for global development. Quite how to use this recognition is problematic and there is grudging reference to the numbers of women involved in small and medium manufacturing enterprises (SMMEs) in the mainstream technology literature. UNIDO's statistic of 80% of labour in informal sector SMMEs being women emphasises the invisibility of women and this is evidenced in the two ITDG projects discussed as 'case studies'. The statistic also emphasises the relevance of taking technology and gender issues seriously for sustainable, long-term development. At the micro level of women's production enterprises, Teszler (1993) and Ahmed (1985) both note the difficulties of getting modern technology and new innovations introduced. This is particularly pertinent in light of Biggs et al's (1996) observation that technology transfer and the diffusion of technical skills result from individual interactions. If women are absent from this process and have no means of accessing it then they will continue to be disempowered through their invisibility. ITDG's Gender-Technology Expert is involved in addressing these issues at a grass root level. The GTZ/EACH project does not have the structure to facilitate this and only latterly recognised the need for technology to be addressed. In light of the absence of gender policy however, it is unlikely that women producers will be the direct beneficiaries.

There is the argument that women need purchasing power first in order to buy technology. This is arguably a development catch 22 and a useful premise by which to deny women access to technology at the project level, for example in

ITDG's light engineering project. With technology women entrepreneurs can produce and their businesses have a greater chance of success. Technology based projects persistently respond to male needs because these are visible and this continues to restrict women's access to technology. Equally, considering women's needs in terms of what men will accept or at least tolerate, results in the same thing. Male needs come first and women 'make do' with whatever is deemed fit within this male constraint. UNIDO points to women's limited participation in the productive sectors of the economy being in part due to the lack of technology appropriate to their requirements. The ITDG projects in Zimbabwe illustrate a continuing lack of participation, denying women immediate access. Gender issues are considered after the project has been formulated despite a commitment to gender policy being presented by top-down policy - gender policy remains symbolic and easily 'got round'.

In all models of development O'Bannon (1994) argues that none place women in the position of self-directing agents and active participants. The women interviewed in all the organisations commented on the need for the empowerment of women through technology and the success of this for women in programmes that had this at least implicitly and in ITDG's case explicitly, as an aim. Publications note that the implementation process of technology projects is improved when users participate by being allowed to respond to the intervention (although this is invariably during or after the event rather than before initial implementation). This is linked to discretionary empowerment, anecdotal evidence presented by the women interviewees suggests that technology based projects involving women are successful and often more so than male only or male dominated projects. Brohman (1996) indicates that women's projects are invariably welfare orientated and peripheral to mainstream economy. Women being restricted to subsistence projects (Parpart, 1995) is evident in ITDG's work but DFID is addressing this by ensuring women are involved in infra-structure projects and the road building is showing positive results for women as well as successfully built roads.

Paradoxically, men benefit from women's involvement in technology and women's economic empowerment benefits the household. The rationale for women's empowerment and inclusion in economic development is the general improvement

of society, including men. However, it is important to offer women technology and design for *their* benefit. Technology is tied to the rational in the modernity model of development, striving for modernisation through technology and technology policy is driven by this given. Although Braun (1994:95) suggests that "not many believe that growth in profligate material consumption can go on forever", I argue that the theories of modernity used implicitly in technology, development and design remain static. This may be visible in ITDG's dilemma of ideology versus market forces - using technology to meet basic needs versus technology to indulge in capitalist production and consumption. This is presented as a dualism, either / or but is positioned in the singularity of modernism for development. Consequently there is no answer to the dichotomy. As Moghadam (1993) states, development exists in the capitalist system of the producer / non-producer dichotomy, where global accumulation is the motivation. The development discourse presented by UNIDO and UNCSTD in their publications is similarly caught in the 'meta-narrative' of modernism through technology. There does seem to be an underlying, implicit desire to change the current global system of consumerism.

Gendered technological determinism

Discussing products, Balaram (1995) suggests that artefacts are a symbolic mediation process between myth and the everyday. I would argue that this is also true of technology policy and gender policy. Trying to integrate the two results in a challenge to the myth of male technological supremacy and technological determinism. One would expect to find more technology policy implementation but this does not happen, pointing to the strength of technological determinism, or rather a *gendered* technological determinism. An alternative to gendered technological determinism is technology as a negotiated exercise. However, women do not have access to negotiating about technology at any level. Technology is moved to the level of expert by all societies (the private / public dualism) and therefore cannot be relational. The nature of the policy process is that relational work is carried out by women and feminised men.

Women's limited access to technology is controlled by cultural, patriarchal perceptions of the relationship between women and technology which paradoxically relies on technology determinism as its rationale. This is exemplified by the male designers. However, involving women in the design of capital goods is a positive way, I suggest, of opening up technology and technological decision making to them. Being given the opportunity to discuss their technological needs puts women in a position of some control and in the long run may encourage some to become involved in technology production. Currently it is more a site of struggle as evidenced by the research but as Heeks (1995) argues, participation in technology choice is essential for successful implementation.

Huyer (1998) suggests that adequate policies for women and technology exist at the international UN level and the research indicates that this is the case to a degree. What is clear is that the implementation of these policies is wholly inadequate. Telford's (1996) concept of hyper-masculinised organisations indicates why implementation of gender sensitive policies is so problematic in technology - challenging gendered technological determinism. The challenge to individuals' sexual identity through challenging gendered technological determinism is indicated both in international development organisations and design consultancies emphasising the globalised phenomenon.

Design

I argue that design has potential as a strategy to get women's technology needs on the agenda. The interviews suggest that design is exclusive rather than inclusive, a masculine approach tied up with ownership and control. However, there is a potential role for design in bridging the gap between technology and women users. At a macro level Biggs et al (1995) assert that a measure of technological capabilities is the "ability to produce according to own design". This can be applied at the local / project level and women's technological capabilities could be encouraged through involvement with design (of both production technology and artefacts).

Design has become an 'expert' profession which is able to be both exclusive (predominantly white, Western, male), yet at the same time claim inclusivity through designing products for people. Consequently, I would argue designers have power that results in them not having to be conscious of international policy and its structures. Designers' notions of what developing countries should access regarding products are influenced by romantic visions of the 'bush'; Western aesthetics and expensive looking products are not appropriate. This points to a Western control of aesthetics at every turn - from mass produced consumer durables to handicrafts. The design organisations' perceptions of developing countries based on the Third World 'bush' is not dissimilar from the approach taken by the GTZ/Protrade development project. Although the 'other' is identified as a producer, implicit imperialism dominates and the 'other' becomes a passive recipient of aid. The concept that products designed in the West for developing countries need to have integrity refers to a number of things; charitable honesty on the part of the designer, form very clearly following the products function and a product which will not become a superficial consumer durable. Paradoxically, design from developing countries, visualised in handicrafts, has in many instances become dishonest and lost its cultural integrity because it has to be adaptable to the Western market and meet these 'needs'. It too has to be functional but this is what the consumer wants, in developing countries the consumer is rarely asked what she might want. Indeed women are rarely thought of as consumers although Moss (1997) suggests that women are essential to African self-sufficiency and could be used to create a "new consumer society".

Design offers "status and rewards" to designers but these rarely encourage participatory design, designers rarely having to seriously consider 'others' (Goodall, 1983; Walsh et al 1992). The interviews with the private sector designers revealed a basic masculinist ideology, reflecting the patriarchal power entrenched in the global "patterns of consumption and production" (Johnson, 1999:221). Claims of gender neutrality are made by male designers who assert that 'design is just design'.

Finding product design in development organisations took some questioning. It was evident that there is a general lack of understanding or awareness of what product

design actually is, relating to perceptions of design as art and only to do with aesthetics, not technology. The lack of good product designs and inadequate design skills is noted by UNIDO, World Bank and GTZ/Protrade publications but at no point do they comment on how this could be addressed. The impression is that design is simply supposed to happen as a natural phenomenon. This also suggests a lack of understanding of what design is. ITDG has attempted to address the design issue in its "women as technologists" programme by including a design component in its workshops - this happened as a result of personal commitment by the Gender-Technology Expert and the intervention of the researcher with design experience.

Design is associated with capitalism and masculinity, development with charity and a romanticised 'other'. On the other hand, design is associated with art and closet designers. The potential of design for manufacturing has been identified in relation to the consumer market but not in relation to participatory processes. Women are identified here as a new market for male artisans. There are a number of groups involved in researching and advocating the importance of gender for science and technology and sustainable development, people-centred science and technology. Design is more or less absent from this discourse but it is acknowledged at an individual / project level and treated as a tool rather than a conceptual framework. Design, as an essential element in the process of innovation must be recognised as such by development, it is more than merely a "marginal element to technology" (Bonsiepe, 1995).

Craft

Craft production is the area in development where design is most explicit with the emphasis on the design of artefacts. The association of craft with charity and being disabled in some way whether physically, as a refugee, as a woman etc. does permeate development practice and theory. The lack of consideration given to production technology for craft is apparent in appropriate technology publications and in technology policy literature. The androcentriscm of technology development

and policy is very evident. Craft is rarely linked to technology and this is illustrated by the ITDG projects and GTZ/Protrade. The association of women with craft production has resulted in women's technology needs rarely being addressed, particularly for manufacture other than that concerned with food processing. Rowbotham (1997) argues that craft skills influence technology, there is a connection between domestic craft and technology.

A GTZ/Protrade consultant for the EACH project suggests that the success of handicrafts could form the basis of African industry, producing products from its own designs (Wienholt, 1997). This could be a positive shift but a gender perspective has to be applied from the outset - women could lose out considerably. UNIDO's Unit emphasises that there is a need to ensure gender sensitive policies are implemented if women are not to be further disadvantaged in the informal sector as a result of structural adjustment policies. The Zimbabwean Designer argues for the semi-industrialisation of the craft industry for real development but suggests there is no commitment to address this by international development organisations, as she commented, craft for development is used as a cheap option.

Mitter (1997) asserts that women have little power when their horizons are limited by tradition and the norms of their communities. Handicraft production entrenches this, romanticising and globalising tradition. Traditional technology systems are frozen in time and space through handicraft production and the emphasis on artisanal products for exporting to the West. This denies the potential for diversity and local/national innovation. The low social profile of craft commented on by UNESCO is evident in the GTZ/Protrade EACH project. Equally evident in UNESCO and GTZ/Protrade is the imperialism which craft for development seems to generate. The emphasis by a number of development organisations on craft production for development is, I think, misguided. It has become part of the acceptable 'social issues' school of development. I agree with the women in UNIDO who argue strenuously for the importance of industrial development and equally strenuously for the involvement of women in the process. The focus on craft production, the definition of crafts as having to involve direct human contact in the manufacturing process, will persistently limit indigenous technology innovation. It will also let the developed world off the hook of creatively transferring technological

innovation. De Forest (1980:20) suggests that technology 'not directed toward satisfying needs and desires beyond a minimum subsistence level' will fail and he highlights the importance of luxuries as well as necessities. The emphasis on manufacturing for export denies the importance of the local market for development. It also denies the importance of artefacts to cultural identity, placing the emphasis on either 'pseudo-tradition' or globalised consumer products (perhaps these are becoming one and the same thing - Coca Cola and carved wooden giraffes available everywhere).

CONCLUDING COMMENTS

The research asked questions about gender of individuals, female and male. The responses elicited from male interviewees indicated a degree of panic, arguably the focus on gender in organisations is beginning to decentralise the dominant patriarchy suggesting that something is shifting. Technology may be seen as the last bastion of masculinity in development organisations. Women and women's units in organisations appear to have little influence over mainstream international technology policy processes although subversive action is taken through policy implementation at the grassroots level.

The ideology that technology determines gender roles and 'there is nothing you can do about it' results in a gendered technological determinism. Malestream technology policy literature rarely, if ever, discusses gender and / or women and technology remains an overtly masculine sector in development organisations. Consequently the implementation of technology projects is male dominated and there is implicit and explicit 'getting round' gender issues. Edwards (1994) assertion that mainstreaming gender introduces challenging new information may be the case but mainstreaming and this new information can be 'got round' regardless of obvious inequality. The process ends up being individual values versus organisational policy although the policy supports and even demands implementation. Gender policy continues to be associated with an individual within an organisation despite policy to mainstream. Isolated individuals in large

organisational structures can create a challenge, influencing other individuals and building a coalition for change.

There is evidence of good practice and change despite the imperative of having to implement something as seen in the GTZ/Protrade EACH project. The organisations revealed a difference in approach for both 'getting round' gender policy and ensuring its implementation in technology based projects. The determination on the part of an individual to implement gender policy and an organisational effort to ensure implementation of its gender policy were both evident.

Documents with no obvious gender awareness have a tendency to discuss people, women and men, in the abstract. Value judgements are made based on assumptions of modernism and gender neutrality is all pervasive in macro-economic policies despite gender mainstreaming. Lyotard (1994:45) suggests that there is an "organic" link between technology and profit and the research found that this is indeed a motivating force for the use of technology in development. Development argues for the need for developing countries to participate in the global market and the need to respond to market forces, yet industry is largely ignored by development organisations who perversely argue that the private sector will respond to the needs of consumers in developing countries. I maintain that understanding the relationship between technology, design and industry is key for development.

Arguably a change in emphasis from profit and product to people would acknowledge the social implications of design and production, the importance of creativity and participatory design. Much of what the documents say is valid and taking a gender perspective to the main premise, that the production of artefacts will result in economic development, can change the focus. This could result in sustainable industrial development and production for local as well as export markets. Social structures based on consumerism result in the continuation of the extremes of the 'haves' and 'have nots' as well as environmental degradation. What will sustainable development look like from a global view? A shift from a gendered technological determinism to an explicit acknowledgement of the social structuring,

including gendering, of technology by international development organisations is necessary if this question is to be answered.

The literature revealed an abundance of material on gender and technology issues at theoretical and empirical levels. Taking a 'slice' through international development organisations revealed positive gender aware technology policy at a symbolic level. However, the implementation of gender aware technology policy is shown to be dependent on individual discretion and this discretionary potential is greater than people realise and can be used to subvert the policy or reinforce it.

The disempowerment of women through technology in development is being challenged but technology continues to be used to support patriarchal structures. Clearly trying to counteract patriarchy in the policy process takes up women's energy leaving little to edge towards change. The research suggests however, that it would be too despondent to argue that patriarchy is overwhelming. There is at least tentative acknowledgement that things need to change although there is a reluctance to address the core issues. There is evidence of good practice, evidence of good policy and where this exists, it can be built on. However, it is a weak process without the backing of mainstream resources which often go to those who have no commitment to the policies. Giving women the opportunity to discuss their technological needs puts them in a position of some control and in the long run may encourage some to become involved in technology production and to break down the gendered technological determinism.

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LIST OF ABBREVIATIONS

AT	Appropriate Technology
CAD	Computer Aided Design
CEO	Chief Executive Officer
CSD	Chartered Society of Designers
DAC	Development Assistance Commitee
DFID	Department for International Development
EACH	Europe Africa Co-operation for Handicrafts
EC	European Council
EU	European Union
GAD	Gender and Development
GESP	Gender Equality Strategy Project
GWG	Gender Working Group
GTZ (German	Deutsche Gesellschaft fur Technische Zusammenarbeit Agency for Technical Co-operation)
ICSID	International Council of Societies of Design
IDE	International Development Enterprises
IDRC	International Development Research Centre
IFPBW	International Federation of Business Women
ILO	International Labour Organisation
IMF	International Monetary Fund
ITC (UN)	International Trade Centre
ITC (ITDG)	Intermediate Technology Consultants
ITDG	Intermediate Technology Development Group
JFS	Joint Funding Scheme
LEP	Light Engineering Project
NGO	Non Governmental Organisation
OECD	Organisation for Economic Cooperation and Development
OFAN	Once and Future Action Network
QFD	Quality Function Deployment
SDA	Social Development Advisor
SME	Small and Medium Enterprises
S&T	Science and Technology
SMI	Small Manufacturing Industries
UN	United Nations
UNCSTD	United Nations Conference on Science, Technology & Development
UNCTAD	United Nations Conference on Trade & Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific & Cultural Organisation
UNIDO	United Nations Industrial Development Organisation
UNIFEM	United Nations Development for Women Programme
WID	Women in Development
WTO	World Trade Organisation
WWW	World Wide Web

APPENDIX

Main subject areas covered in semi-structured interviews

Design Consultancies

- Issues around design for development: theory, own practice, perceptions
- Women and design: theory, own practice, women as designers
- Design and technology:
- Design networks: existence of / involvement with; national, international

NON GOVERNMENTAL ORGANISATION

Intermediate Technology Development Group (ITDG)

ITDG UK

- Gender and technology: theory, policy process, practice - implementation of policy in developing countries, personal response.
- Design: understanding and use of.
- Relationship with other international development organisations: government, United Nations.

ITDG Zimbabwe

- Gender and technology: theory, women's use of technology, policy process; formulation and practice - implementation of policy in developing countries, response to ITDG UK and Head Office, personal response.
- Design: understanding and use of, indigenous design, women as designers.

- Relationship with other international development organisations: government, United Nations.

GOVERNMENTAL ORGANISATIONS

Department for International Development (DFID)

DFID UK

- Gender policy: symbolic and implementation - internal and external to organisation.
- Technology policy: gender issues, development and transfer.
- Design: perception and use of.
- Relationship with other international development organisations: networks, as a donor, EU, UN.

DFID Zimbabwe

- Gender policy: symbolic and implementation - internal and external to organisation and relationship to Head Office; implementation in a developing country; personal response.
- Technology policy: gender issues, implementation.
- Design: Awareness and use of.
- Involvement with other international development organisations.

GTZ/Protrade Germany

- Gender policy: existence of - government guidelines; internal and external to organisation; implementation in developing countries; personal response.
- Technology policy: existence of; role of technology in craft production; women producers and technology; producing for global market; personal response.
- Craft production: modernity / tradition; Western 'needs'; basis for development.

- Design: role in development; role of designer in implementing project.

- Relationship to other international development organisations: networking, EU, UN.

GTZ/Protrade EACH Project Designer Zimbabwe

- Relationship to GTZ/Protrade: awareness of gender policy, technology policy; guidelines for project implementation; personal response.

- Design: control of design decisions; indigenous design; tradition / modernity; participation; basic needs; global market; use of technology.

SUPRA GOVERNMENTAL ORGANISATIONS

United Nations Conference on Trade and Development (UNCTAD)

- Gender policy: promoting women and technology - in organisation and internationally (refer to UNIFEM Review); implicit, explicit; personal response.

- Technology policy: transfer and use of technology. links to gender policy. as above.

- Design: product and craft - UNIFEM Review, implicit concern with women's role in design.

- Relationship with other UN and international development organisations: UNCTSD publication and Gender Working Group; Advocacy.

United Nations Industrial Development Organisation (UNIDO)

- Gender policy: in organisation, implementation, implicit, explicit; women and industry; role of Unit in organisation; UNIFEM Review; personal response.

- Technology policy: links to gender policy and perceptions of in UN organisations;

- Design: perception and use of; role in industry and women's enterprises.

- Relationship to other UN and international development organisations: UN 'corporate' policy on gender and technology; 'focal points'; networking; NGOs.

International Trade Centre (ITC/UNCTAD/WTO)

- Gender policy: in organisation, implementation, implicit, explicit; women and trade; UNIFEM Review; personal response.

- Technology policy: links to gender policy and perceptions of in UN organisations; entrpreneurship.

- Design: Perception and use of in projects.

- Relationship to other UN and international development organisations: UN 'corporate' policy on gender and technology; 'focal points'; networking; NGOs.